# PULP & PAPER

MARCH 1960

Additives—A Dilemma for Mills
page 78

Russia, Canada—Competitors?
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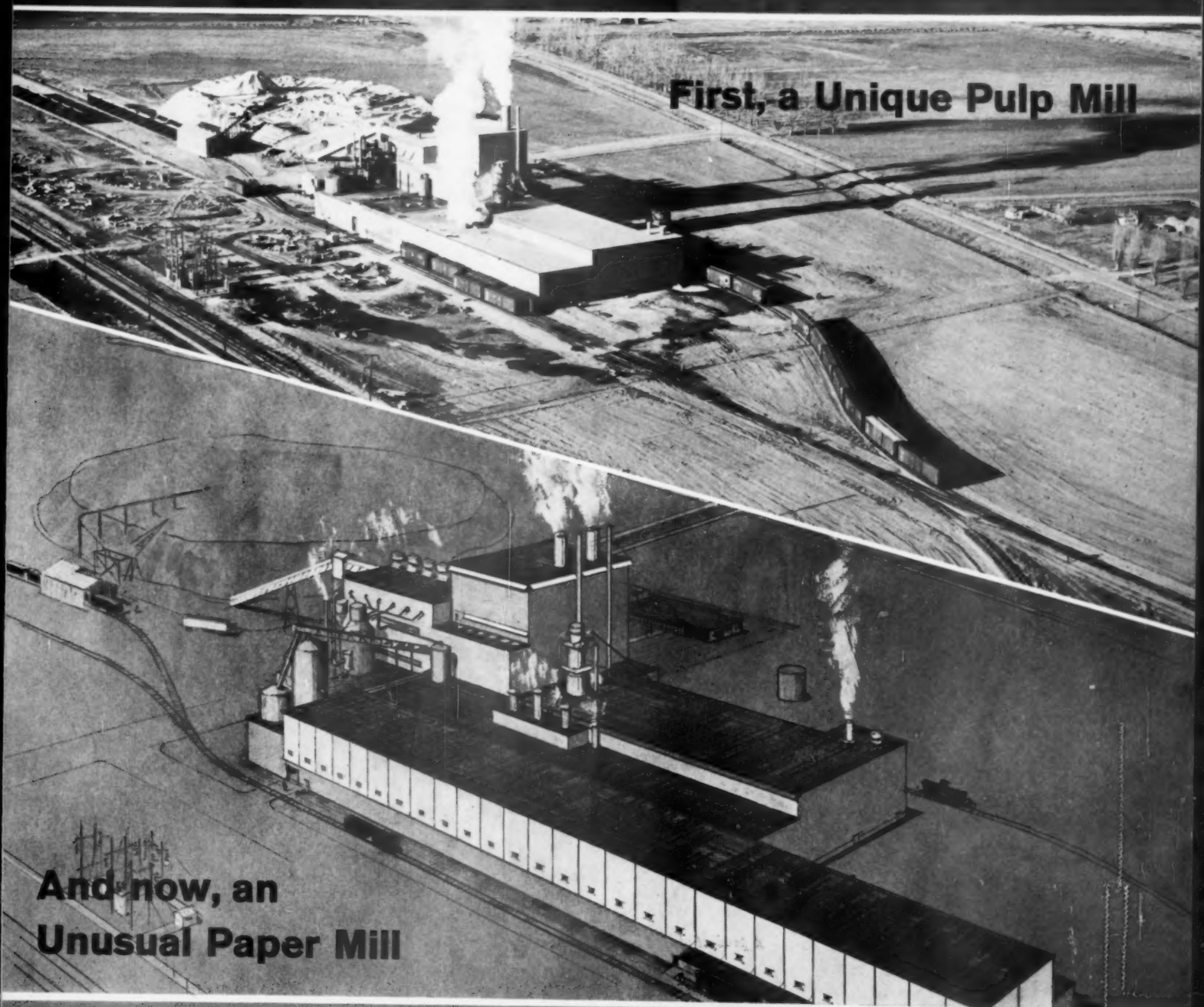
Change in Hardwoods Status
page 112

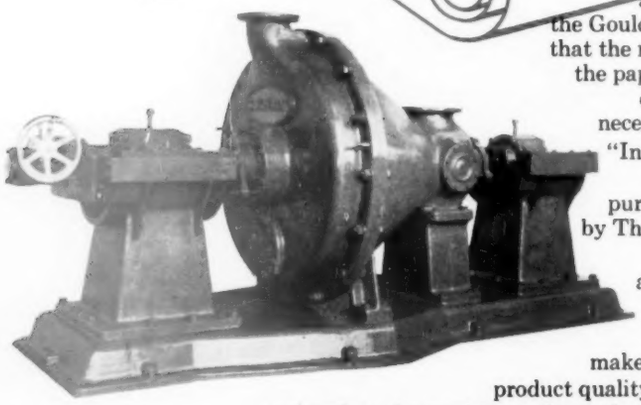



FIRST PUBLISHED REPORT:

New Waldorf-Hoerner mill pioneers fluff pulp drying p. 82

# "A better sheet at lower price"...

**says David K. Cooper, Jr., Chief Engineer, Gould Paper Company, Lyons Falls, New York**



"In our efforts to produce a better sheet at lower price than our competitors," the Gould Paper Company reports, "we found that the refining equipment for stock ahead of the paper machines did not permit the close control of the stock properties that is necessary to meet exacting specifications.

"In order to get the necessary control on No. 2 Machine, it was decided to purchase a Claflin refiner, manufactured by The Emerson Manufacturing Company.

"Results have been excellent, and a similar machine has been purchased for installation on No. 1 Machine.

"This equipment gives the paper makers the tools necessary to improve our product quality, and by making the sheet less likely to break in the machine, reduces the labor entailed in restoring the sheet."

Whether, like the Gould Paper Company, your mill is refining bleached and unbleached groundwood blended with other hardwoods, or other grades, chances are excellent that the Emerson Claflin can help you produce "a better sheet at lower cost," too.

Recognized as *the* most versatile of all refiners, the Emerson Claflin is matchless in preparing a wide range of furnishes — Fine Papers . . . Container and Liner Board . . . Bag, Wrap, Multi-wall, Gumming . . . Corrugating . . . Roofing . . . and Wall Board . . . Hot Stock, High Yield and others.

Only Emerson makes the Claflin. For more information, write The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusets.

**Now . . . the NEW**

**EMERSON CLAFLIN 303**

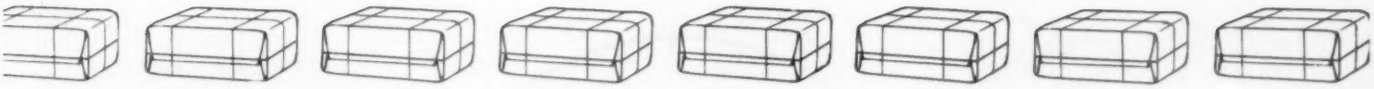
newly engineered for new operating efficiency

*Among its features —*

- Oil mist lubrication system
- Visual oil and pressure gauges
- Interchangeable shafts
- Micro-feed plug adjustment
- Withstands 100 psi throughout
- Split head for easy stuffing removal
- Fully enclosed bearings
- Centralized inspection and control points

**Emerson CLAFLIN®**

*A product of* BOLTON EMERSON



# Produce Pulp at less cost per ton with Rice Barton's Fibre-Flash Pulp Dryer

Within 100 mi. of Oslo this pulp mill is producing 100 T.P.D. at impressively low costs.

From stock chest to baler the **FIBRE-FLASH** system is mechanically far simpler, has a minimum of moving parts and costs less to operate and to maintain than conventional pulp dryers. It conserves every physical characteristic of pulp and is currently being used successfully for both groundwood and chemical pulps.

With our *Pilot Plant* you can see the advantages of drying your pulp the **FIBRE-FLASH** way. The lower capital investment, the lower installation cost and the smaller amount of space required also make flash-drying the most economical, modern method of drying pulp. Write today for complete details.

PHOTO COURTESY KAMMEFORS BRUK, KRAGERO, NORWAY

**Rice Barton** CORPORATION • WORCESTER, MASS.

FOURDRINIERS, PRESS SECTIONS, DRYER SECTIONS, CALENDERS AND SUPERCALENDERS, REELS, WINDERS, HEAD BOXES, SIZE PRESSES, BREAKER STACKS, DIFFERENTIAL DRAW CONTROL DRIVES AND CONE PULLEY DRIVES, PULPING EQUIPMENT, HIGH VELOCITY AIR DRYERS, TRAILING BLADE COATERS, FIBRE-FLASH DRYING SYSTEMS

# This could be the most productive and profitable circle of floor space in your entire mill

5 FEET

The Model 14 Bird Centriscreen, handling up to 5600 gpm or more, depending on stock character and consistency, may be set down on your floor just about anywhere you can find a five foot circle — in the basement, on the machine floor, on a mezzanine — at any level between the fan pump and head box.

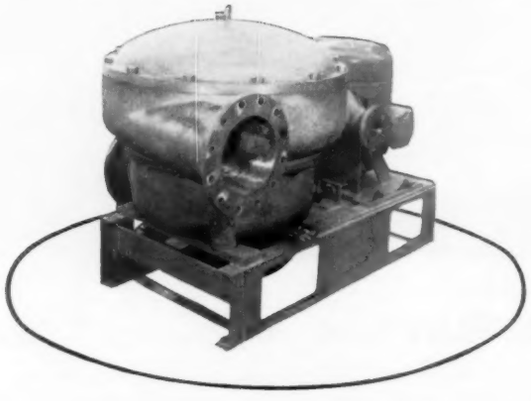
Put it to work and here's what it does for you, according to its large and fast growing army of users, handling just about every kind and grade of paper and board made today:

**increases paper quality and uniformity**
**improves sheet formation**
**produces repeatable results on difficult grades**
**permits maintenance of desired stock temperature in the head box**
**eliminates lumps and slime**
**reduces breaks on the machine**
**reduces down time**
**permits operation at maximum machine speed**
**increases wire life**
**lowers screening cost per ton very substantially**

*May we submit recommendations, layouts and estimates?*

**BIRD MACHINE COMPANY**

**SOUTH WALPOLE, MASS.** • *Regional Offices:* EVANSTON, ILLINOIS • PORTLAND, OREGON • ATLANTA 9, GEORGIA



The Model 10 Centriscreen is useful where stock volumes are moderate — takes up even less space.

PULP & PAPER

# Reader's Guided Tour

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NUMBER 3

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## 78 Additives Deadline – March 6?

Enforced to the letter, new Food Additives Amendment *could* drastically change many concepts of modern packaging and bring "new look" to the supermarket. On one thing government and industry agree: Amendment's present status is "somewhat clouded."

## 82 "Really New" Mill – Exclusive

On-the-spot report by Editor Al Wilson of first chemical pulp mill of its kind. Waldorf-Hoerner plant at Missoula, Mont., may set future patterns. A "different" paper mill, too. Nels H. Sandberg (picture) is president, and creator of new plant.

## 94 Giant Competitors – Canada, Russia?

That is the possibility forecast at annual Canadian meeting in Montreal by CPPA President Robert Fowler (picture). Revolutionary new way of making paper was a highlight of technical sessions—the Inverform. Team from England explains what it is all about.

## 112 Hardwood Status Needs Change

An about-face change in the Southern industry's attitude toward hardwoods is proposed at SPCA meeting. Not only do hardwoods make up 55% of South's 193 million forest acres but they are good papermaking fibers. Opportunities for hardwood improvements are big.

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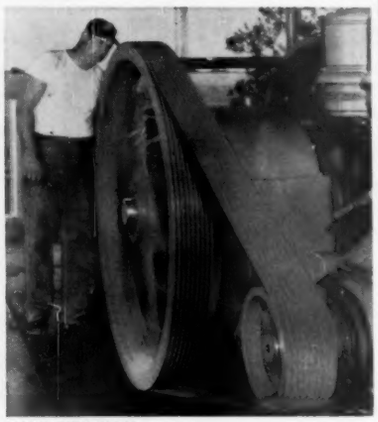
B.F.Goodrich

# V belt briefs

TIPS ON THE CARE, MAINTENANCE AND SELECTION OF V BELTS FOR INDUSTRY

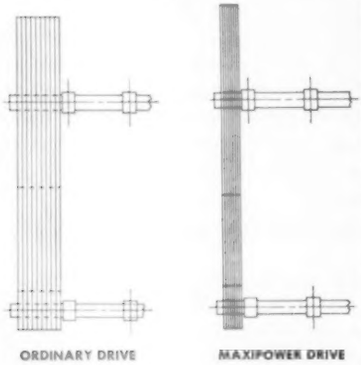
ORDINARY V BELT DRIVE



MAXIPOWER DRIVE

**SAVE $402.14 ON V BELT DRIVES**—*Costs for* both *sheaves and V belts were cut when B.F. Goodrich Maxipower belts replaced ordinary belts on this drive. Size and weight of sheaves were reduced, smaller and fewer V belts were used*—eight *5V2500 belts replaced* nine *D-240 belts. The result: a $402.14 saving. Costs can be cut as much as 30% by switching to a Maxipower V belt drive.*

## How Maxipower V belts reduced bearing load 42%

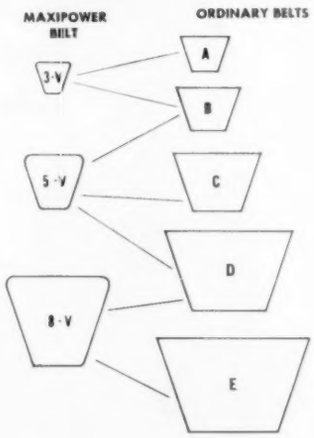


ORDINARY DRIVE MAXIPOWER DRIVE

In the installation shown above, sheaves for the Maxipower drive are lighter, have a face width of only 5 13/16", compared to a 13¼" width for the sheaves on the ordinary drive. Because there's less weight, less shaft overhang, bearing load for this Maxipower drive is 42% less for the driven shaft shown than the drive replaced. This greatly increases bearing life.

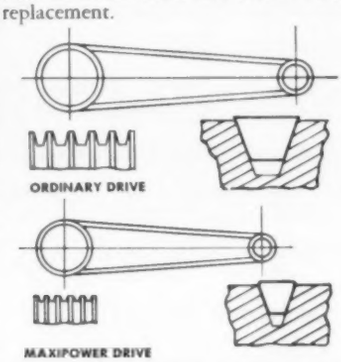
## With Maxipower V belts, three cross sections do the work of five

Each cross section of the new B.F. Goodrich Maxipower V belts has been fitted to a particular horsepower range so that only three cross sections are needed instead of the A, B, C, D, and E sections of conventional V belts. The three cross sections are 3V, 5V and 8V.




## New BFG Maxipower V belts save space, weight, bearings, dollars

New B.F.Goodrich Maxipower V belts give up to three times the horsepower-carrying capacity in the same amount of space as ordinary belts. This more compact drive gives you more horsepower per dollar, results in substantial savings, both in initial costs and often in belt replacement.



ORDINARY DRIVE MAXIPOWER DRIVE

In most Maxipower installations, fewer belts and smaller diameter sheaves are used, center distances are shorter. Costs can be cut up to 30%, valuable space is saved. Sheaves have narrower grooves and groove spacing, are smaller, less costly. The smallest sheaves that can safely be used with the drive motor can be installed. Often these will be 50% smaller than present drives. This reduced sheave weight and face width means less shaft overhang, less bearing load—increased bearing life.

The extra strength of Maxipower V belts comes from its new rubber compounds, the tough fibers used in its load-carrying cords, and the new "deep V" design. Because of this design the belt's load-carrying cords are supported so completely that each has an equal share in the load—none "loaf".

All Maxipower V belts are heat-resisting, oil-resisting at no extra cost. Belts with static conducting properties can also be ordered *at no extra cost.*

For further information and help in selecting Maxipower belts for your drives, call your B.F.Goodrich distributor. *B.F.Goodrich Industrial Products Company, Dept. M-793, Akron 18, Ohio.*

**B.F.Goodrich V belts**

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MILLER FREEMAN PUBLICATIONS

# The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

## Wishes to Import Paper

Editor: We wish to import the following papers into our country and we would like to contact the paper mills manufacturing such kinds of papers:

1. Manila tabulating paper
2. Machine coated woodfree paper
3. Machine coated folding box board
4. Kraft liner and jute liner
5. Semi-chemical pulp-made medium paper for corrugating
6. Paraffin paper
7. Blotting paper
8. Imitation parchment (glassine paper)
9. Paper towel

FUTAMI TRADING Co., LTD.
33, Kakutacho, Kita-Ku
Osaka, Japan

## A Slip-Up in Latin Name

—Ithaca, N. Y.

Editor: I am a constant and enthusiastic reader of PULP & PAPER and particularly of the Pulpwood Section. This has been uniformly excellent and informative until the January issue where in article on p. 96 editorial Jove nodded. To wit:

*Pinus strobus* is reserved as the name of Eastern White pine and of course does NOT grow in Taylor County, Florida. It could not be a "money tree" there. It IS in its proper habitat and is of right the foremost tree in the entire United States. Both historically and in view of its intrinsic qualities—tho NOT primarily for pulp.

What you presumably mean is *Pinus Elliottii*, the Slash pine, which has all the attributes you mention.

A. B. RECKAGEL
Consulting Forester

## Incentive to Expand

Editor: After my return to India, I happened to witness myself the tremendous and enthusiastic reception accorded to President Eisenhower at New Delhi and his message given at that time is still echoing in our ears again and again:

"One thing I assure you, from now on I shall be quick to assert on every possible occasion that India is becoming one of the great investment opportunities of our time—an investment in the strengthening of freedom and in the prosperity of the world."

This has really encouraged us to plan out our program somewhat more boldly and we are thinking in terms of expanding our project from 60/70 long tons/day to 200 tons/day. We are looking into all the details and would naturally be writing to the people who have shown their interest in our project.

B. D. SOMANI,
Director, The West Coast
Paper Mills Ltd., Bombay, India

Editor's Note: Mr. Somani and A. D. Chaudhari, technical director, visited the U.S. in late-1959 to secure financial assistance to expand their bamboo kraft pulp mill at Dandeli, in the State of Mysore near Bombay. Their mill uses 100% bamboo and has twin modern paper machines.

## "Particularly Well Done"

—New Hope, Pa.

Editor: Your report on the Association of Pulp Consumers' Southeast tour in January is most interesting and I must compliment you on a job particularly well done in every respect.

FERDINAND R. WHITE
President, Assn. of Pulp Consumers Inc.
President, Union Mills Paper Mfg. Co.

## Notice to Subscribers

**If you did *not* receive your copy of the February issue of PULP & PAPER, please let us know—and please accept our apology.**

**It has become apparent that some of the mailing labels and wrappers were lost in the mails between our Circulation Department in San Francisco and our press in Connecticut. This did not come to light until all copies of the February issue had been mailed, so we have no way of telling which subscribers missed this issue.**

**If you did not receive your February issue, please drop a note or card to the following address and we will get your copy on its way by return mail:**

**PULP & PAPER**
**ATTN: Readers' Service Desk**
**500 Howard Street**
**San Francisco 5, California**

*Paper sculpture by Giuseppe Baggi*

*Pulp from* **Gottesman** *means...*

# SOMETHING SPECIAL!

*Bleached and Unbleached Sulphite • Bleached Hardwood • Groundwood*
*Bleached, Semi-Bleached, and Unbleached Kraft*

THE GOTTESMAN ORGANIZATION

WOOD PULP G

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# MONTHLY REPORT – WORLD NEWS

PULP MILL RUMORED IN SOUTHEASTERN IDAHO . . . Unconfirmed reports say pulp mill construction being considered in Idaho Falls area. Only other operation in the state is that of Potlatch Forests Inc., maker of sulfate at Lewiston.

PROGRESS AT CROSSETT, ARK. . . . where Crossett Paper Mills is building $6,000,000 plant to produce medium-density wood shavings board from gum wood. Annual production based on 3/4-in. stock: about 25,000,000 sq. ft. Franchise for the process was granted by Roddis Plywood Corp., Marshfield, Wis.

UFAN DIGESTER TO BE MARKETED . . . Unit that reportedly produces kraft, semichemical or acid sulfite pulp in a maximum of 1 hr. from shredded chips will be built and marketed by Goslin-Birmingham Mfg. Co. Inc., Birmingham, Ala. Digester was developed at Univ. of Florida by Dr. William J. Nolan.

VEGETABLE PARCHMENT'S BIG OPPORTUNITY . . . With increased attention U. S. Food & Drug Adm. is giving to additives in food and food packaging, E. R. Leonhard, president of Paterson Parchment Paper Co., predicts: "Vegetable parchment is expected to gain some of the business that may be lost by other types of packaging materials." (See report on food additives situation in this issue.)

$1,250,000 MODERNIZATION FOR DONOHUE BROS. LTD. . . . at groundwood and newsprint mill in Clermont, Que., Canada. New facilities will add about 10,000 tons to annual 106,000-ton capacity. Included: new steam-generating unit with facilities for burning bark; 40-ton per day grinding unit, and increased speed and efficiency for the Rice Barton and Fales paper machines.

FOLDING CARTON INCREASE CONTINUES . . . says the Folding Paper Box Assn. of America. Industry volume for 1959 was $944,000,000, compared to $909,000,000 in 1958; tonnage increased from 2,314,000 to 2,372,000.

CROWN ZELLERBACH CORP. PRODUCTION RECORD . . . was achieved in 1959, when this producer turned out 1,800,000 tons paper and paperboard, 12.5% above 1958 and 7.5% above previous record (1956).

THIRD MACHINE FOR TWO-YEAR-OLD MILL . . . at Naheola, Ala., where Marathon Southern Corp. hopes to have Black-Clawson unit in production by mid-summer. Daily capacity will approximate 300 tons bleached board. Machine length: 545 ft.; wire width: 238 in. Project necessitates additional steam and power, new pulp digester and causticizing equipment. Construction and installation will be by Rust Engineering Co.

NEW FOURDRINIER FOR OREGON . . . where Menasha Wooden Ware Corp. (Menasha, Wis.) will install Black-Clawson unit at 100-ton semichemical pulp-paper mill to be erected at North Bend. Construction — scheduled to begin shortly — will be by Rust Engineering Co.

NO. 9 FOR LONGVIEW FIBRE . . . in Longview, Wash., is on order practically before new No. 8 is broken in. New Beloit unit (168 in.) will produce lightweight papers or semichemical corrugating medium at 125- to 150-ton daily rate, bringing 24-hr. production to about 1,250 tons. Estimated cost of No. 9 and auxiliaries: $5,000,000.

PULP MILL CONSTRUCTION IN MISSISSIPPI . . . where Lumberton Pulp Co. is building 100-ton plant at Hattiesburg. Operation expected by early 1961.

NET INCOMES SEESAW, SALES UP . . . for 1959, as reported by representative North American firms. Net Incomes: Brown Co., $714,203 ($1,295,631 in 1958); Crown Zellerbach Corp., $39,300,000 ($33,305,000); Keyes Fibre Co., $1,960,916 ($1,649,493); Nekoosa-Edwards Paper Co. (total earnings), $3,076,000 ($2,500,000); Riegel Paper Corp., $2,623,468 ($3,001,418); Scott Paper Co., $24,795,070 ($22,114,465).

# . . . Fluid Power news

**REPORT NO. 12,103**

**"HYTAC"* SYSTEMS ON NEW PAPER MACHINE**

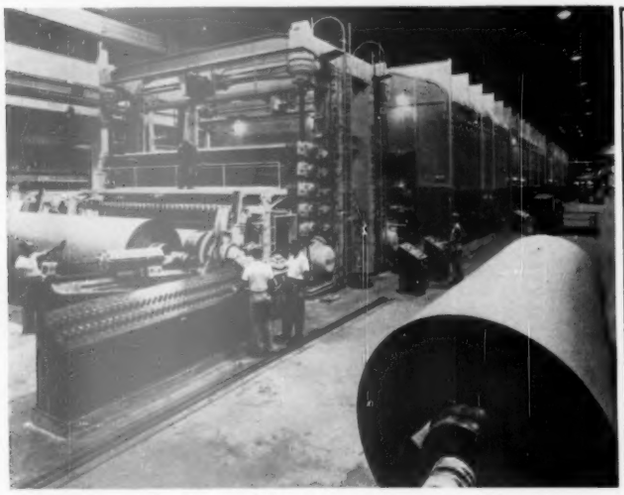
From Oilgear Application-Engineering Files

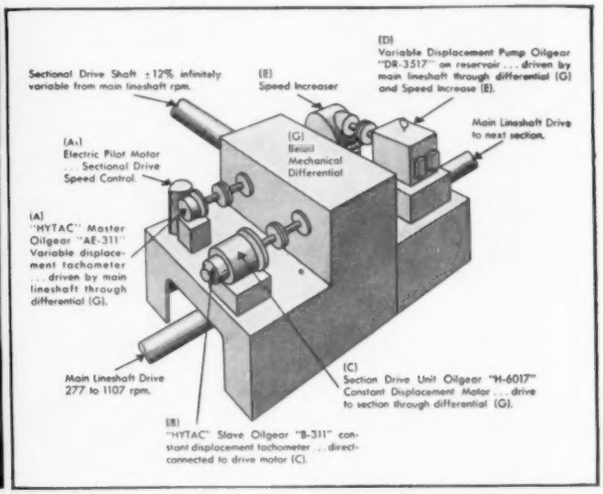
## HOW OILGEAR *"ANY-SPEED"* DRIVES ON NEW PAPER MACHINE ACCURATELY CONTROL SECTION SPEEDS

**USER:** *West Virginia Pulp and Paper Company (Westvaco) (Builder—Beloit Iron Works, Beloit, Wisconsin)*

**DATA:** Systems to individually vary and accurately control speeds on four sections of a new, 264-in., $25,000,000 paper machine that will produce up to 225 tons daily of a revolutionary, patented, smooth, extensible kraft sheet. Machine is powered from a block-long main lineshaft with mechanical differentials at each section. Main lineshaft speed will vary over a 4:1 range—from 277 to 1107 rpm.

**REQUIREMENTS:** 1. A system that, when applied to each of four mechanical differentials, will provide individual, precision-controlled, infinitely variable increase or decrease of 10% over or under main lineshaft speed—as selected from 2 local, and 7 remote push-button stations. 2. Each system to maintain selected speed for its section within ±0.25% max. variation over a 50% load change at max. lineshaft speed. 3. Systems must also be: a. Compact. b. Impervious to moisture and daily high-pressure "wash-down." c. Thrifty on electrical power input. d. Trouble-free for continuous, heavy-duty, full-production paper machine drive service.



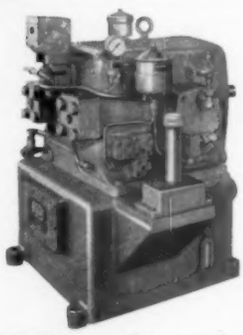

(D) Variable Displacement Pump Oilgear "DR-3517" on reservoir . . . driven by main lineshaft through differential (G) and Speed Increase (E).
Sectional Drive Shaft ±12% infinitely variable from main lineshaft rpm.
(E) Speed Increaser
Main Lineshaft Drive to next section.
(A1) Electric Pilot Motor . . . Sectional Drive Speed Control.
(G) Beisel Mechanical Differential
(A) "HYTAC" Master Oilgear "AE-311" Variable displacement tachometer . . . driven by main lineshaft through differential (G).
Main Lineshaft Drive 277 to 1107 rpm.
(C) Section Drive Unit Oilgear "H-6017" Constant Displacement Motor . . . drive to section through differential (G).
(B) "HYTAC" Slave Oilgear "B-311" constant displacement tachometer . . . direct-connected to drive motor (C).

**SOLUTION:** *Application-Engineered* Oilgear *Hytac** (hydraulic tachometer) controlled drives provide precise, individual speed control on each of four sections—3rd dryer, 1st calender, 2nd calender, and winder reel of Westvaco's new #3 kraft machine shown above. Drawing, above right, shows components of typical sectional drive. *These highly accurate, compact, heavy-duty systems have met or exceeded all originally specified requirements.* Examples: 1. Specified ±10% infinitely variable sectional speed control range exceeded by providing ±12% in actual operation. 2. Selected speeds are maintained within specified limits *regardless* of load change. 3. Production speeds increased to over 2000 fpm. Important "Oilgear-plus" features are: 1. Dual winder control that, with the mere flip of a control panel switch, converts winder drive from speed-controlled to tension-controlled . . . speed control prevents tearing the tail strip when starting a new core, while tension control provides good roll quality at full sheet width. 2. Cushioned, controlled acceleration and deceleration. 3. Positive overload protection. 4. Pressure and flood lubrication with continuous power fluid filtration.

**OPERATION:** Fluid from master tach (A) gives section drive speed command to control on pump (D). Slave tach (B) feeds back a flow signal proportional to actual section drive speed. When main lineshaft speed is increased or decreased, fluid flow from master tach (A) automatically increases or decreases to command section drive to follow lineshaft speed change. Through local or remote pushbutton stations connected to electric pilot motor ($A_1$) on master tach (A), operator can increase or decrease speed of each Hytac section infinitely up to 12% of prevailing lineshaft speed.

A second Westvaco kraft machine will have an *Application-Engineered* Oilgear Controlled Motion System to cover a 10:1 lineshaft speed range, and a wider sectional speed range adjustment.

*"HYTAC" Systems—An Oilgear Trademark



*Left:* Oilgear Sectional Drive Pump (D) with integral reservoir. *Right:* Oilgear Sectional Drive Motor (C) with direct-connected *Hytac* slave (B) to left.

Fluid Power drives and controls were selected after three years of development on this process and machine—from a 2-in. table model, through a 15-in. laboratory model and 60-in. pilot model. Conventional variable speed drives could not provide the sectional speed control required. "*Equipped with the most advanced precision controls known to the industry . . .*"—is the statement Westvaco has made concerning their new #3 machine.

**. . . for the lowest cost per year—it's Oilgear!**

*For similar practical solutions to YOUR linear or rotary Controlled-Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to . . .*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*Application-Engineered Controlled Motion Systems*

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# MONTHLY REPORT – WORLD NEWS

EUROPEAN-AMERICAN COOPERATION IN CANADA . . . where recent discussions advance plans for construction of $40,000,000 pulp mill in Manitoba. Gurney Evans, provincial minister of industry and commerce, met with financial groups in New York, Boston, Chicago, Montreal and Toronto. (Canadian representatives were acting for European interests.)

PROBLEMS WITH NEW PAPER COATER . . . was a major factor accounting for decline in net earnings at Oxford Paper Co. during 1959, says President William H. Chisholm. Pioneering installation of North Star trailing blade unit entailed perfection of entirely new concept, and problems were expected. "However," Mr. Chisholm explains, "we did not anticipate the number of problems that arose." Most of these have been solved, and installation is expected to prove its hoped-for advantages this year.

CLUPAK TO TAKE OVER KRAFT FIELD . . . within five years, says West Virginia Pulp and Paper Co. New product research on stretchable paper is growing.

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY . . . Plans for 1960 at Thilmany Pulp & Paper Co., Kaukauna, Wis. include: new polyethylene extruder, relocation of supercalenders and major projects for recovery and power plants. . . . Boise Cascade Corp. has made arrangements with John Hancock Mutual Life Insurance Co. for commitment of up to $14,000,000 to finance future expansion; included is expansion at Cascade Kraft Corp., Wallula, Wash. . . . Acquisition of Downing Box Co., Milwaukee, Wis. by Longview Fibre Co., Longview, Wash., has been completed through an exchange of stock. . . . Package Corp. of America has opened $2,500,000 corrugated shipping container plant in Lancaster, Pa. . . . Beckett Paper Co., Hamilton, Ohio has purchased from Baldwin-Lima-Hamilton Corp. a 125,000-sq. ft. building adjoining the mill.

PROBLEM IS POWER FOR PROPOSED ALASKAN MILL . . . says James L. Buckley, president of Georgia-Pacific Alaska Co. A 75-acre site has been secured on Douglas Is. near Juneau and design completed for 500-ton pulp mill. Sufficient power is not now available, according to Mr. Buckley; but if government's tax-financed project is approved, "deterrent of unavailability of low-cost power" would be removed. . . . G-P must reaffirm interest in project to qualify for purchase of 7.5 billion bd. ft. of National Forest timber.

FTC FINDING FAVORS SCOTT . . . Scott Paper Co. has been absolved of violation of Section 7, Clayton Act and Section 5, Federal Trade Commission Act. Charges stemmed from firm's acquisition of Soundview Pulp Co., Detroit Sulphite Pulp & Paper Co. and Hollingsworth & Whitney Co. (Examiner's decision is subject to Commission review.)

THE INDUSTRY AT LARGE . . . Directors of Standard Packaging Corp. and Brown & Bigelow approve proposed merger terms. . . . Pending stockholder approval, merger of Federal Paper Board Co. Inc. and Manchester Board & Paper Co. Inc., becomes effective March 2. . . . Banner Fibreboard Co., Wellsburg, W. Va. has increased capacity 15% while also improving color uniformity and capacity and permitting greater uniformity. . . . Continental Can Co. has completed 83,000-sq. ft. addition at Tyler, Texas plant; included was new 85-in. corrugator. . . . Simpson Timber Co., Seattle, will build 20,000-sq. ft. forest products research and development laboratory near Bellevue, Wash. . . . Bechtel Corp. has completed structural steel erection at multimillion-dollar expansion at San Joaquin, Cal. pulp anl paperboard mill of Fibreboard Paper Products Corp.; major equipment will include a third paperboard machine (Black-Clawson) for production of kraft linerboard at annual rate of 72,000 tons. . . .

# Which of these 3 products and services can you use from BECCO?

## New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

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**No. 31 — Groundwood Bleaching Variables — A Statistical Approach.**

**No. 32 — $H_2O_2$ Bleaching of Chemicals and Mechanical Pulps.**

**No. 47 — Peroxide Bleaching of Pulps.**

**No. 48 — High-Density Pulp Bleaching.**

**No. 64 — Development Studies on Last-Stage $H_2O_2$ Bleaching of Alkaline Pulps.**

**No. 65 — Peroxide Bleaching of Southern Pulps.**

**No. 66 — Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.**

**No. 91 — Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.**

**No. 92 — Peroxide Bleaching of Chemical Pulps.**

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# MONTHLY REPORT – WORLD NEWS

CONCEPT OF HIGH-SPEED SHEET FORMATION TAKES HOLD . . . with report that Inverform machines are now being built for several mills throughout the world. Inverform unit — developed by and first installed at St. Anne's Board Mill Co. Ltd., Bristol, England — has produced paper at speeds in excess of 3,400 fpm and paperboard at more than 1,400 fpm. . . . Development of plastic wires being speeded to solve one of machine's problems.

U. S.-INDIA COOPERATION . . . Crown Zellerbach Corp. has entered agreement with Rohtas Industries Ltd., Dalmianagar (Bihar), India, to provide technical assistance and personnel training in paper production. Rohtas' annual output is 60,000 tons — 20% of India's total production.

TRIAL ERECTION OF RUSSIAN MACHINE . . . AB Karlstads Mekaniska Werkstad, Karlstad, Sweden, is setting up and testing first of two kraft liner machines being built for Russia. Complete dryer section will not be erected at one time but in 69-ft. parts. Overall machine length is 656 ft. — from inlet box to reel.

U. S. SUPPLIER FIRM EXPANDS OVERSEAS . . . Dow Chemical International Ltd. SA will build a styrene-butadiene latex plant in Rotterdam, the Netherlands, to be operated by Nederlandsche Dow Maatschappij NV. . . . At same time, firm announces formation of Dow Chimica Italiana SpA in Milan for construction of multimillion-dollar plant producing a number of products, including Dow polystyrene.

LATIN AMERICA TO GROW "FAST AND BIG" . . . says David L. Luke, president of West Virginia Pulp and Paper Co. (Firm owns Rigesa SA and provides 20% of Brazil's shipping boxes; bagasse is the raw material.) "Latin America," he declares, "helps our big problem — supply. We believe in long planning here. When we went into Brazil we didn't expect to show profits for five to ten years. We've made a profit every day since we opened."

BRITISH-RUSSIAN COOPERATION IN GRAPHIC ARTS . . . One of first graphic designs produced in Russia and printed in England is a double crown poster advertising Exhibition of Russian Books & Periodicals at Royal Festival Hall, London. Paper is Bowaters Lithcote supercalendered coated on one side.

AUSTRIAN PAPER PRICES INCREASED . . . by up to 6% (for printing grades) following approval by the Government Price Control Board. Average boost is 3%.

OUTER SEVEN WOULD WELCOME U. S. A. . . . as a member of the European Free Trade Area, says Gustaf Cederwall, under secretary of the Swedish Ministry of Commerce.

PAPER MACHINERY TO BE BUILT IN INDIA . . . according to five new plans approved by the government. Each calls for collaboration with foreign firms and also for construction of five paper mills: two with daily production of 50 tons each, two with production of 5-10 tons and one with 5 tons.

PACKAGING EXPANSION IN ENGLAND . . . where Bowater-Eburite Flexible Packaging Ltd. will build in Gillingham, Kent, for production of cartons, special-purpose coated wrapping papers, waxed papers, paper and film bags, etc. The 320,000-sq. ft facility is scheduled for operation in March or April.

MORE ACTIVITY IN THE FAR EAST . . . where mill construction at Mandya National Paper Mills Ltd., Mysore State, India, is announced jointly by the Parsons & Whittemore/Lyddon Organization (New York, London and Paris) and Bedi & Co. (Private) Ltd. of Bangalore. Plant will be integrated and will have initial daily capacity of 35 tons high-grade writing and printing papers produced from sugar cane bagasse pulp. . . . Pulping operation will be by a Black-Clawson Pandia continuous digester. Also included in the project: 138-in. Fourdrinier with auxiliary equipment; liquor burning and chemical recovery systems.

# Belted out 2,200,000 cords—lasted twice as long

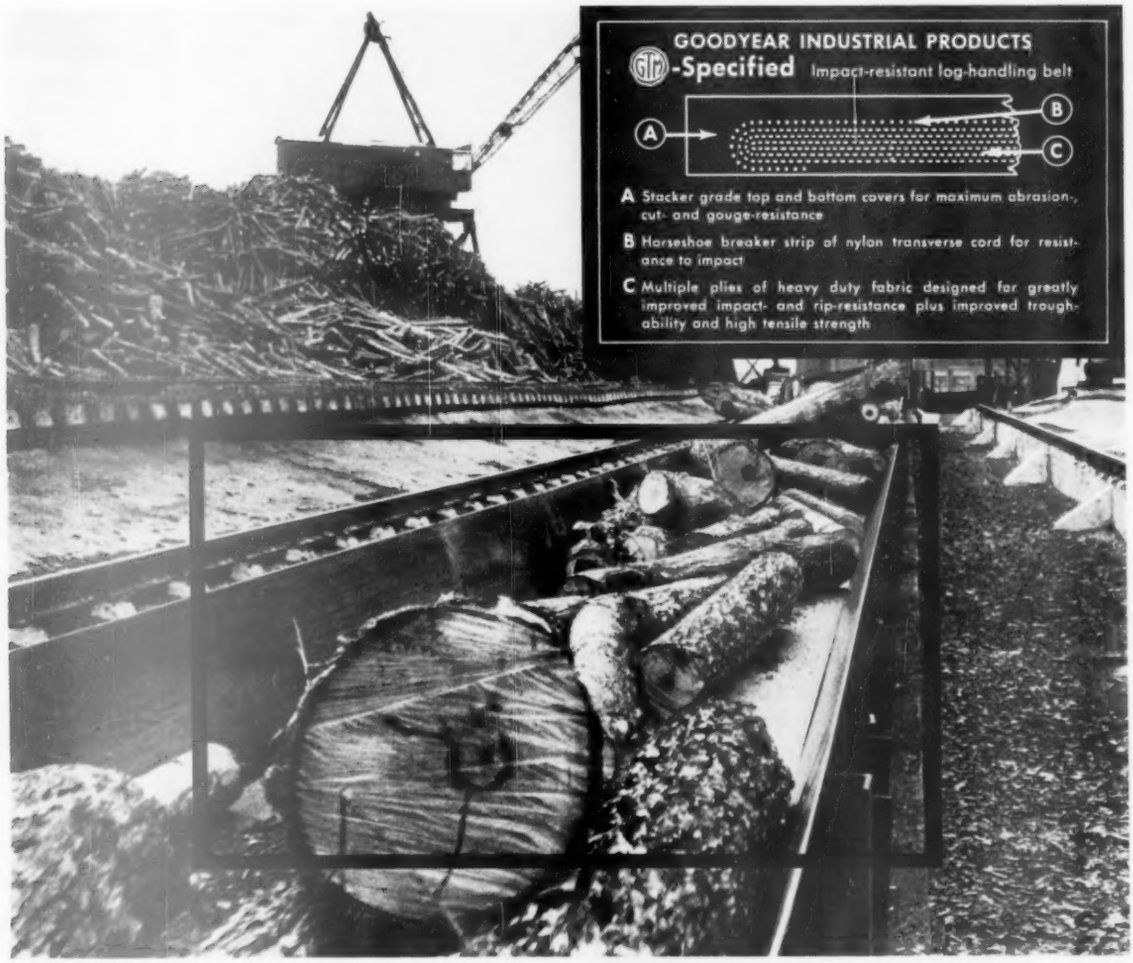
"Unbarked logs will chew any rubber belting to pieces," the scoffers claimed. But that didn't stop this big East Coast paper mill from replacing chain conveyors with a complete rubber system more than ten years ago.

The G.T.M.—Goodyear Technical Man—had pointed out that one rubber belt with 700-foot centers could do the work of two to three shorter chain-type conveyors. And a rubber belting system would take substantially less power—even at greatly stepped-up belt-speed.

But the real pay-off: in the 10 years since original installation, the G.T.M.'s belts have proved *twice* as long-lasting as the former chain conveyor. Maintenance has been cut. And even in a rare case or two of accidental damage, belts have proved easier, quicker and less expensive to repair.

Here, then, is still another case where the G.T.M.'s recommendation—and the right industrial rubber—meant never-before-achieved efficiency and savings. For expert advice on materials handling problems, contact the G.T.M. through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

**IT'S SMART TO DO BUSINESS** *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*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GTM-Specified Impact-resistant log-handling belt
A
B
C
A Stacker grade top and bottom covers for maximum abrasion-, cut- and gouge-resistance
B Horseshoe breaker strip of nylon transverse cord for resistance to impact
C Multiple plies of heavy duty fabric designed for greatly improved impact- and rip-resistance plus improved troughability and high tensile strength

CONVEYOR BELTS BY

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THE GREATEST NAME IN RUBBER

## High Gloss—Germany

Das Papier 13, no. 11/12: 267-8 (June, 1959). [Ger.] Abstr. Bull. I.P.C. 30: 160.

Except for cast-coated papers, all coated papers require some additional treatment to produce a glossy surface, e.g., by flint or friction glazing. Another alternative is the use of polishing brushes in a brush-coating application. Flat-brush coaters of the W3 type comprise three rotating brushes, arranged in horizontal sequence, each of which comes five times in contact with the coated web, resulting in an optimum gloss. Glazing calenders are unsuited for imparting gloss to chromo carton boards prepared by on-machine coating processes [such as the Massey, Egan, Jagenberg (air-brush), or size-press methods], because of the high (*ca.* 20%) compression of the board and the resulting loss of stiffness. The Type W3 flat-brush coating machine is likewise unsuited for lack of speed development and other practical reasons. A new cylinder or roller coater with horsehair or other natural fiber brushes has been developed which avoids the disadvantages of other board coaters and affords satisfactory smoothness and gloss when installed at the end of the board machine between the calender stack and the winder. Three cylinder-brush coaters of the novel design have performed satisfactorily in Germany, Finland and Switzerland.

## Carboxymethylcellulose

Petropavlovskii, G. H., and Nikitin, N. I. The properties of carboxymethylcellulose of low degree of substitution obtained from *Larix dahurica* wood. Trudy Inst. Lesa, Akad. Nauk S.S.S.R. 45: 93-102 (1958). [Russian] Abstr. Bull. I.P.C. 30: 155.

Carboxymethylcellulose properties of low substitution degree (gamma nos. 2-25) and solubility in dilute alkali were obtained from cotton linters cellulose and from refined larchwood kraft pulps either by mercerization with 12-17% sodium hydroxide and subsequent treatment with a solution of monochloroacetic acid in ether, or by reacting the cellulose with a solution of chloroacetic acid in 12-17% sodium hydroxide. Since the etherification rate was higher by the second method, this method was used in subsequent experiments carried out to determine the effects of temperature and reagent concentration on the reaction and the properties of the products. Up to 40°C., the reaction rate increased with the temperature; between 40 and 70 it remained approx. constant, apparently because of the higher rate of chloroacetic acid degradation. The degree of substitution of the products was directly proportional to the amount of chloroacetic acid used (from 0.2 to 1.6 mole/mole of cellulose), but was only slightly affected by prolonged reaction time. When cotton cellulose and larchwood kraft pulp were etherified under identical conditions, the carboxymethylcellulose preparations obtained were similar. The yield of carboxymethylcellulose from the kraft pulp was slightly lower. The carboxymethylcellulose preparations of low degree of substitution were completely soluble in 6.5% sodium hydroxide when frozen, but only partly soluble at 18°. Transparent films of high mechanical strength were obtained from concentrated solutions of the carboxymethylcellulose preparations.

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## Parameters of NSSC Pulping—I

Janci, Jan, and Fellegi, Jan. Papír a celulosa 14, no. 1: 2-5 (Jan., 1959). [Slovakian] Abstr. Bull. I.P.C. 30: 215-216.

In lab. NSSC cooks of beechwood, the amounts of sodium sulfite and sodium bicarbonate added (on the basis of o.d. wood weight) were varied from 4.8 to 40.1% and from 1.9 to 15.7% respectively, but the sulfite: bicarbonate ratio was kept constant at 5:2. In all cooks the solids: liquor ratio was 1:5, and the max. cooking temp. was 170°C. A reducton in lignin content and increases in pulp brightness and theoretical sulfite consumption were observed with increasing concentration of chemicals up to a sulfite concentration of 15% (corresponding to a theoretical consumption of 12%). Further increases in sulfite concentration increased its theoretical consumption but did not affect the brightness or the lignin content of pulps. The mechanical properties of pulps (breaking length, bursting strength, and folding endurance) remained practically unchanged for all chemical concentrations used. Judging from these results, the most economical cooking liquor composition seems to include a sulfite: bicarbonate ratio adequate to maintain the pH at the optimum level of 6.8-7.5 and a sulfite content corresponding to a theoretical consumption of 12-12.5% for bleachable pulps and of 7-8% for paperboard pulps.

## Newsprint Slime Control

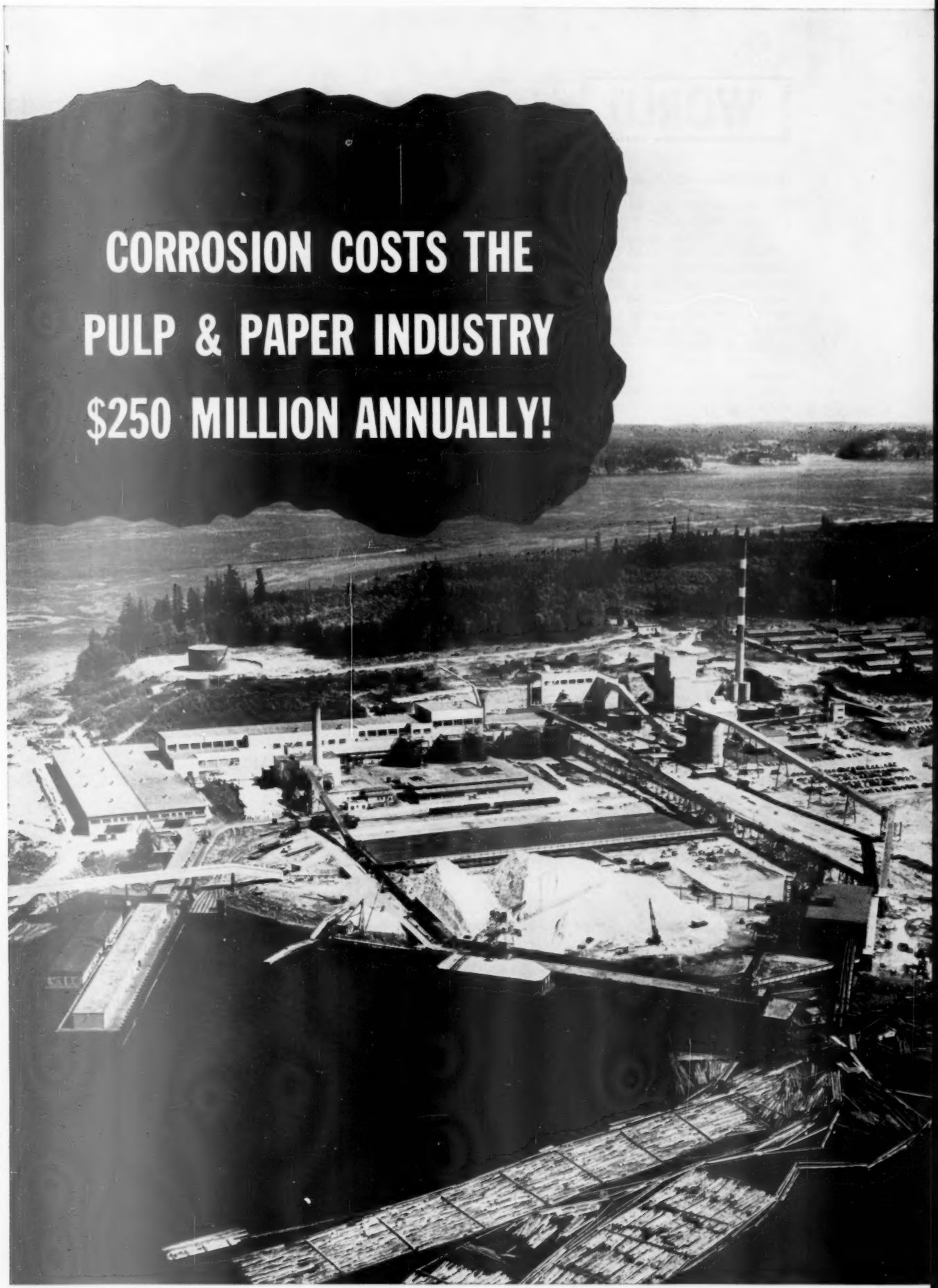
Anton, Ioana. Celulozã şi hirtie 8, no. 3: 93-9 (March, 1959). [Romanian] Abstr. Bull. I.P.C. 30: 146.

Phenylmercuric acetate was added to the water system of a mechanical pulp mill in amounts of 500 g./24 hr., 350 g./12 hr., and 100 g./8 hr. The shock addition of 500 g./24 hr. proved to be most efficient in keeping the installation free of slime, with a resultant capacity increase and improved product quality.

## Steric Electron Microscopy

Jayme, Georg, and Hunger, Günther. Holzforschung 13, no. 1: 1-6 (April, 1959). [German] Abstr. Bull. I.P.C. 30: 165.

Earlier electron-microscopy studies have shown that interfiber bonds of two kinds can form during sheet drying: freely suspended thin membranes form ring-net structures if the microfibrils are randomly oriented, and strandlike structures if the microfibril orientation is parallel. Stereoscopic electron micrographs are presented to show how microfibrils attach themselves to neighboring fibrils on removal of moisture. Fiber-to-fiber bonds can form by direct contact or via adhesive lamellae. The thin-walled fibers of springwood collapse on being dried; they do not flatten out like a ribbon but are shaped like a double T-beam, whereas summerwood (latewood) fibers largely retain their tubelike shape. The outer secondary wall shows wrinkles in axial direction, caused by the removal of solubles during pulping and the consequent relative enlargement of the primary wall. Another series of micrographs shows the strength-reducing effect (particularly on folding endurance) of compact and sharp-edged filler particles in loaded papers.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$250 MILLION ANNUALLY!

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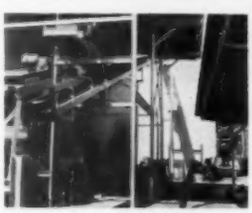

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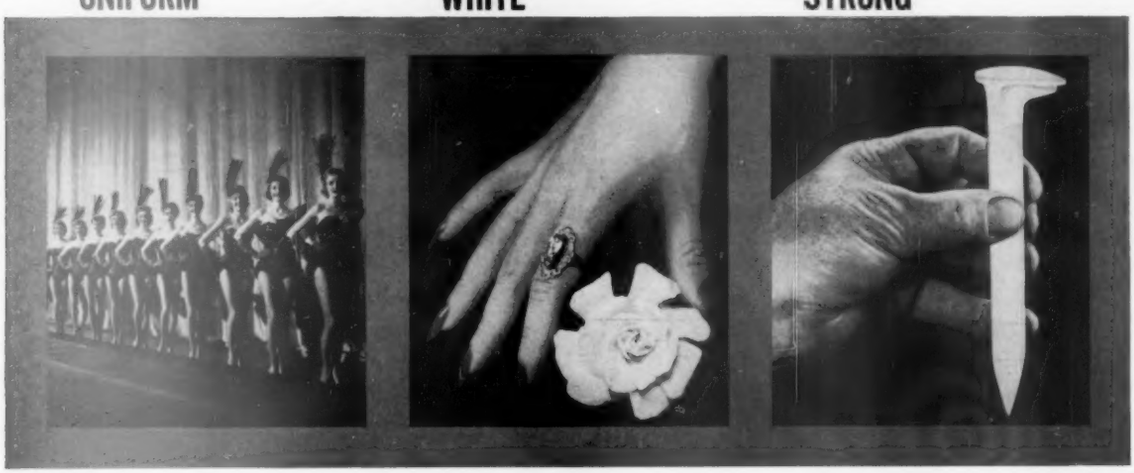

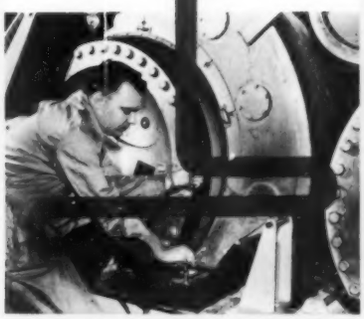

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DRAWING-BOARD PORTRAIT: PREFIGURATION OF THE BELOIT AIR CAP. PHOTOS BY S. R. CHRISTENSEN

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speed and production
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# TOWER or REFINER?

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You may save thousands of dollars in capital investment and chemical cost if you make the right choice between bleaching in a refiner or in a tower.

Du Pont has a thorough working knowledge of both systems and, as the producer of both sodium peroxide and hydrogen peroxide, can tell you which peroxide or combination of peroxides is best for you.

Du Pont technical men will work with you and the equipment manufacturer of your choice to obtain the best peroxide bleaching process for your cold caustic pulp. They may recommend refiner bleaching requiring a small investment for peroxide solution make-up equipment with possible brightness increases of up to 20 points . . . or if your operation calls for it, they may recommend tower bleaching. When combined with Du Pont's acidification process and a peroxide treatment, tower bleaching can increase brightness up to 35 points.

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**SOLOZONE®** sodium peroxide • **ALBONE®** hydrogen peroxide

*for better bleaching of groundwood—sulfite—kraft—cold soda*

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

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# The DRYER FELT
## they are all talking about—

# The SCAPA
## Synthetic Reinforced Cotton Dryer Felt
has been granted 2,882,933
U. S. Patent No.

Types 1166-S, 1164-S, 1464-S
2070-S and 2064-S are
Drying **more** paper **better**
every day

**SCAPA** known throughout the world wherever paper is made

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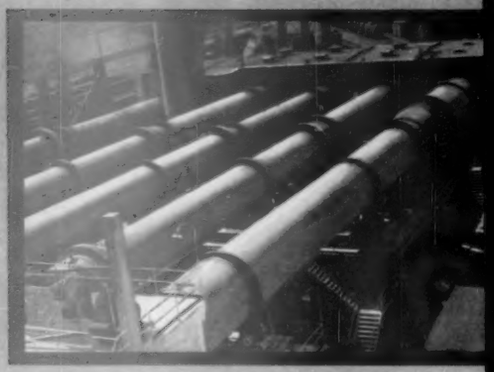
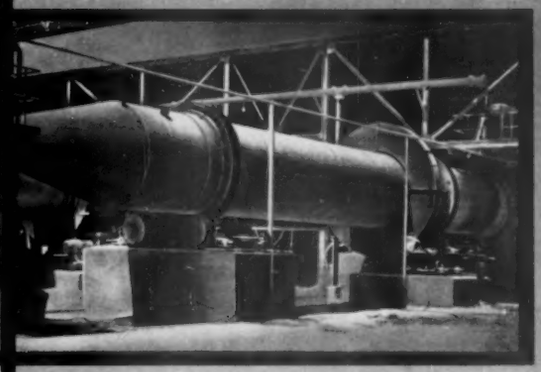
# Traylor-made kilns and slakers

## Advanced design for operating economy



13'—0" dia. to 10'—0" x 200'—0" Traylor Rotary Kilns.



Traylor Slakers in a chemical plant.

8'—0" x 300'—0" Rotary Kiln in a paper plant.

Hundreds of Traylor Rotary Kilns and Slakers are in daily use by the processing industries throughout the world. The long history of successful operation of Traylor machinery is assurance that your machine problem will be handled efficiently and expertly by Traylor engineers. For additional information on these fine Traylor products, write for Bulletin No. 1115 today.

6'—0" x 57'—0" Slaker in a paper plant.

GYRATORY CRUSHERS • JAW CRUSHERS
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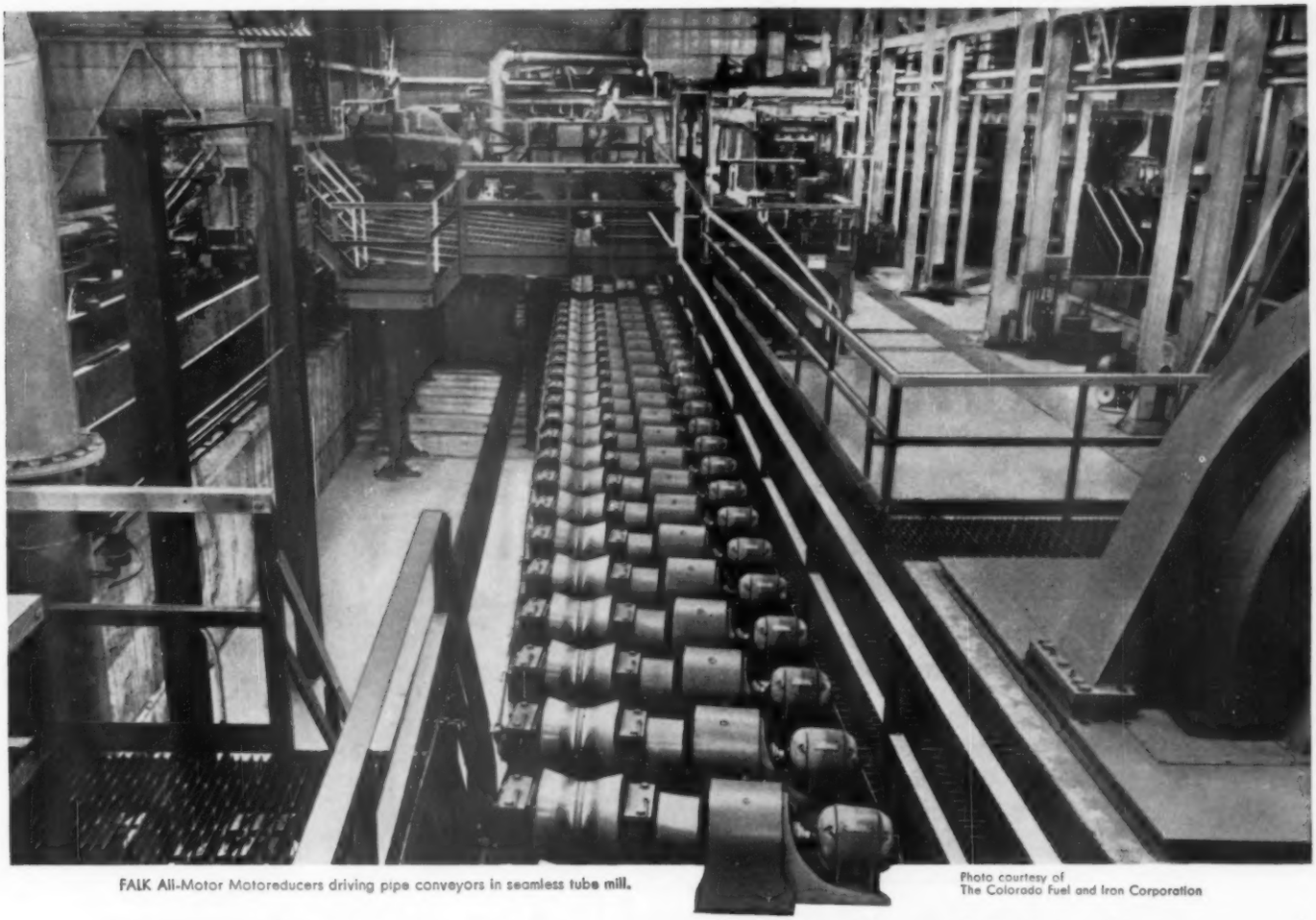


FALK All-Motor Motoreducers driving pipe conveyors in seamless tube mill.

Photo courtesy of
The Colorado Fuel and Iron Corporation

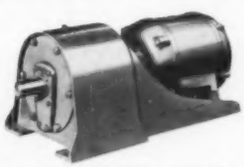
# You get these "extras" when you buy FALK *all-steel* Motoreducers

1. **Freedom from damaged housings.** The exclusive FALK *all-steel* construction gives full protection from cracked housings or torn-off feet...plus twice the ability of cast iron to maintain vital alignment.
2. **Inherently stronger gear teeth.** By AGMA standards, Falk extra-depth, high pressure angle helical gears are inherently stronger than ordinary helical teeth, thus assuring reliable operation and longer gear life.
3. **Highest known gear efficiency**—98½% per gear mesh under full load! This means maximum productive work for your power dollar.
4. **Longer service life**...advanced FALK design makes it possible to machine both bores for each shaft assembly at one time, thus eliminating possible accumulation of tolerances that occurs when individually machined parts are assembled. The result—better alignment of revolving elements that permits units to transmit rated capacity longer.
5. **Standard units to fit your needs.** Integral and All-Motor® Motoreducers are available in horizontal, vertical and right angle types...a type for every use.

Units are available up to 75 hp; output speeds from 780 rpm down to 1.2 rpm. Prompt delivery from factory, warehouse or distributor stocks.
Ask your FALK Representative or Authorized FALK Distributor for *Bulletin 3100*.

**THE FALK CORPORATION, MILWAUKEE 1, WIS.**
*MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS*
**Representatives and Distributors in most principal cities**

**FALK**
...a good name in industry



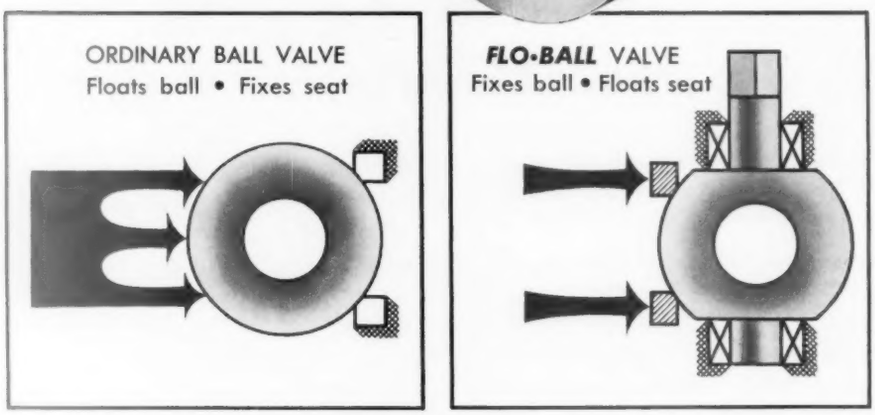
**THE FALK ALL-MOTOR® MOTOREDUCER**
**the original All-Motor unit**
(Shown) Horizontal concentric model. Also available in right angle and vertical types.

**THE ALL-STEEL FALK® SHAFT MOUNTED DRIVE**
Proved best for the countless industrial applications where a reducing unit mounting directly on shaft of the driven machine is indicated.
Units from 1/2 to 50 hp. Ratios —4:1, 14:1 or 24:1. Torque capacity up to 41,000 lb-in (in standard units). Prompt shipment from stock. For details, ask for *Bulletin 7100*.

# Only *FLO•BALL* valves are "Bearing-Fixed" for maintenance-free long life!

**...with all the features you must have:**

- **Top loading**
- **Replaceable seats**
- **One-piece ball and stem**
- **90° on-off**
- **Two-way flow**




**Floating ball puts excessive pressure load on fixed seats. Results in distortion and short life.**

***FLO•BALL*** **bearings absorb all pressure forces. Elimination of excessive seat loading insures long life.**

The ***FLO•BALL*** is competitively priced in all materials and sizes through 10" in 150 lb. and 300 lb. class. Write today to Hydromatics for full information on this extraordinary valve.

FLO-BALL

## Hydromatics, Inc.

LIVINGSTON, N. J. • WYMAN 2-4900 • TWX = LIVINGSTON, N. J. 120

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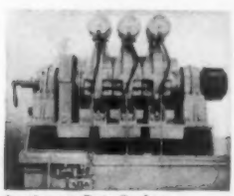
Exceptional engineering employment opportunities—write today!

# The New Roll
## *protects your investment!*

**ONLY 1%** of your production system is used to make your paper or board into rolls. The other 99% of your plant investment is already on the line when the web spins off the unwind, and that's a poor time to gamble on a piecemeal roll production system. Why risk imperfect rolls, lost time and damaged materials when it is so easy to control the roll from unwind to rewind on an integrated system engineered by specialists? The integrated system pays off in continuous production of clean-cut, straight-sided rolls of uniform, controlled density, ideal for handling and shipping, and perfect for feeding to printing and converting operations through faster, longer, trouble-free runs. That's *The New Roll!* Integrate your roll production system and get *The New Roll* now!

**The New Roll**... the symbol for finished rolls of superbly controlled quality, produced with matchless speed and efficiency on a completely integrated roll production system, engineered from unwind to rewind by Cameron specialists.

### Here is the background for truly integrated roll control...



Continuous Duty Brakes

Unwind Stands

Constant Tension Systems

CAMERON BRAKES

Continuous duty pneumatic friction unwind brakes varying in capacity from 3 to 5 horsepower, on up to 360 horsepower, available in many different models and arrangements.

CAMERON UNWINDS

Shaftless and shaft-type unwind stands, including the shaftless automatic pickup type, all available in capacities to suit.

CAMERON CONSTANT TENSIONS

Several highly developed types including the pneumatic dancer roll type, and pneumatic-hydraulic and electric models, all featuring fast, sensitive response; all available with electronic or air-operated side register controls.

CAMERON MILL TYPE WINDERS

Two-drum surface wind, and surface-center wind models, each available in several series, including the famous Cameron Imperial, world's fastest heavy-duty mill-type winder. The Cameron line includes winders and slitter-rewinders to meet every mill and finishing room requirement.

Mill Type Winders

Roll Ejectors, etc.

Converting Equipment

OPTIONAL EQUIPMENT

Optional Cameron equipment, designed to save time and minimize damage, includes automatic shaft injectors, shaft pullers, core loaders, roll ejectors and roll unloading tables.

ACCESSORIES

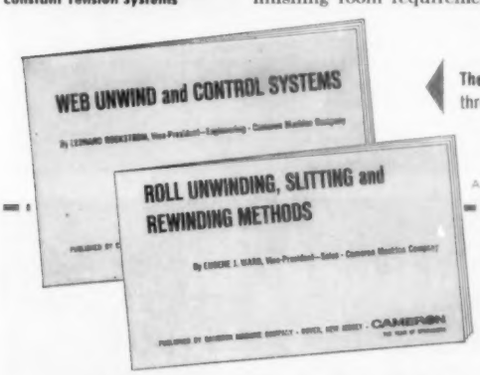
Cameron accessories include pneumatic score-cut, shear-cut and special slitter elements, slitter wheels, slitter wheel grinders, core cutters, etc.

PNEUMATIC SHAFTS

Famous custom-built TIDLAND pneumatic shafts for all types of roll winding and unwind service are sold exclusively by Cameron.

**In addition** to equipment for paper and paperboard mills, Cameron designs and builds a complete line of roll production equipment and roll controls for paper, film and foil converters, textiles, rubber and hundreds of miscellaneous industrial applications.

Thus, Cameron offers you the complete background for a truly integrated roll production system. To stay ahead, call the Cameron team of specialists . . . get The New Roll now!



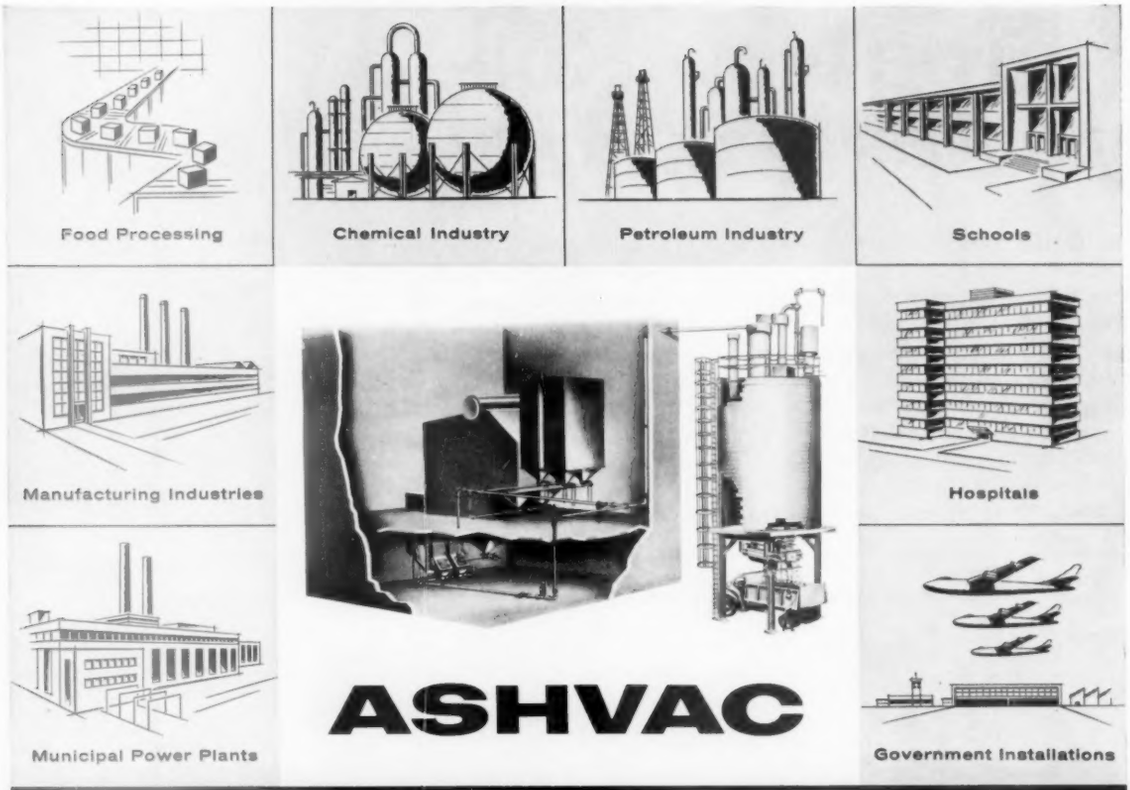

These two valuable books have been written by Cameron specialists to help you break through to new higher levels of profitable operation. Request, by title, your free copies.

AA-376

**CAMERON MACHINE COMPANY, FRANKLIN ROAD, DOVER, N. J.**
**Canada:** Cameron Machine Co. of Canada, Ltd., 15 Hatt Street, Dundas, Ontario
**France:** Batignolles-Chatillon, 5 Rue De Monttessuy, Paris (7e) France

# CAMERON
**a team of specialists**

54 years devoted exclusively to the design and manufacture of slitting, roll winding, unwind and web control equipment.




## Removes Boiler Ash* THROUGHOUT INDUSTRY

The use of ASHVAC (The Allen-Sherman-Hoff Co.'s trade name for their small, steam-jet pneumatic ash removal systems) cuts horizontally across *all* industry. ASHVAC Systems are installed in the central steam plants of schools and colleges . . . textile mills . . . food processing plants . . . municipal power plants . . . hospitals . . . petroleum refineries . . . chemical processing plants . . . all types of governmental installations . . . all kinds of manufacturing plants. ASHVAC finds application in the small and medium size steam generating plants anywhere coal is burned.

Three good reasons why power engineers *specify* ASHVAC Systems:

**ASHVAC is PROJECT ENGINEERED**—There is no "package" system for all applications. Each job is different; ASHVAC uses standard components in a system engineered to the job's specific requirements.

**ASHVAC is PRICED RIGHT**—Years of experience have enabled us to standardize many components, reducing manufacturing costs. A-S-H operates its own manufacturing plant—another cost saving advantage passed on to our customers.

**ASHVAC is BACKED BY EXPERIENCE**—The Allen-Sherman-Hoff Company has pioneered in the solution of ash handling problems. Behind every job is 37 years of experience—giving you the best, cleanest and cheapest system to operate.

**A-S-H service doesn't stop with installation. When service problems come up, we stand ready to give prompt service assistance. This is a policy worth considering when suppliers are being selected.*

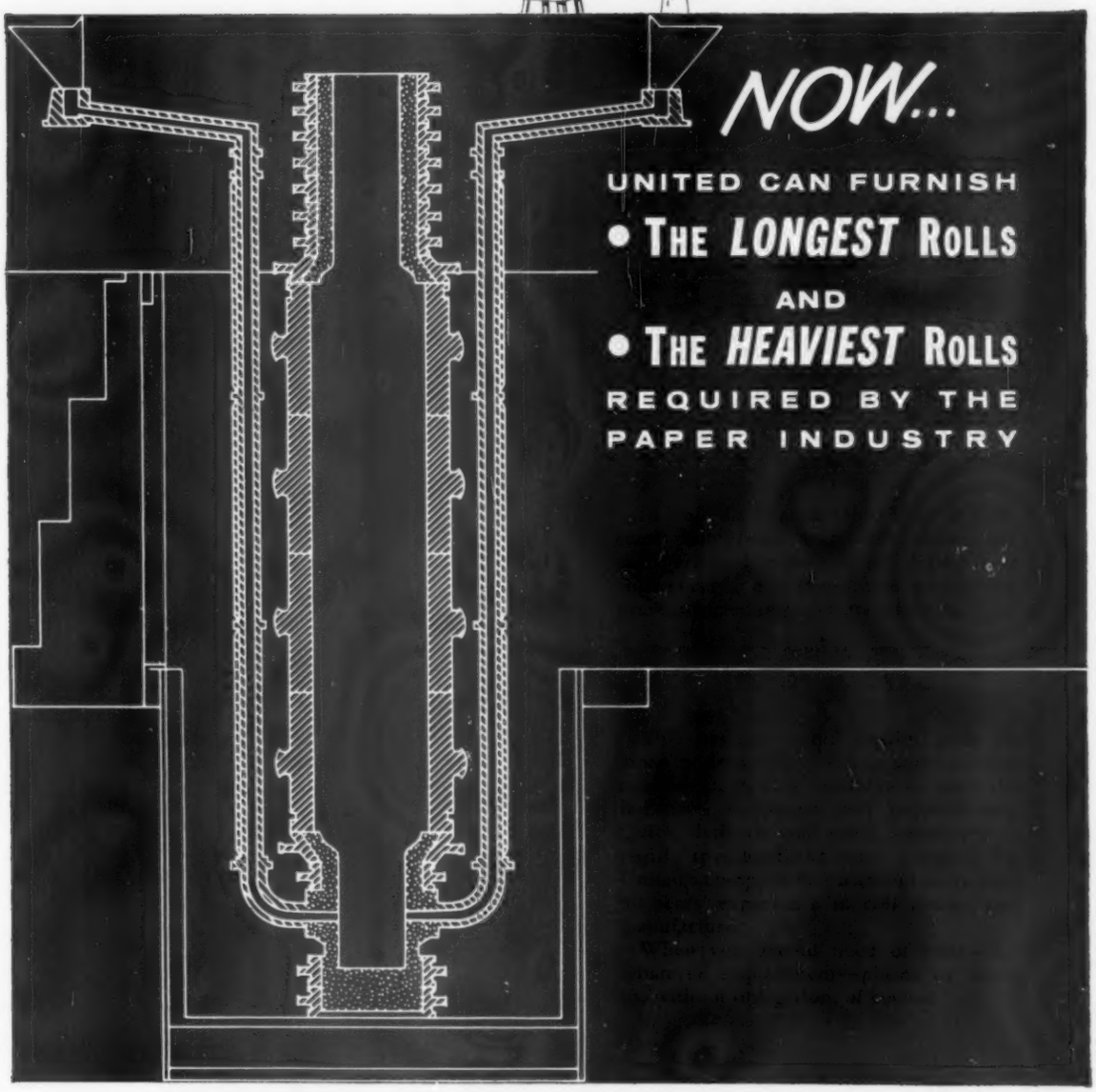
MATERIALS HANDLING SYSTEMS

the **Allen-Sherman-Hoff** company

247 E. Lancaster Ave., Wynnewood, Pa.

*Offices and representatives in principal cities*

# UNITED® PAPER MILL ROLLS



*NOW...*

UNITED CAN FURNISH

- THE *LONGEST* ROLLS

AND

- THE *HEAVIEST* ROLLS

REQUIRED BY THE PAPER INDUSTRY

**UNITED ENGINEERING AND FOUNDRY COMPANY**

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH • VANDERGRIFT • YOUNGSTOWN • CANTON • WILMINGTON

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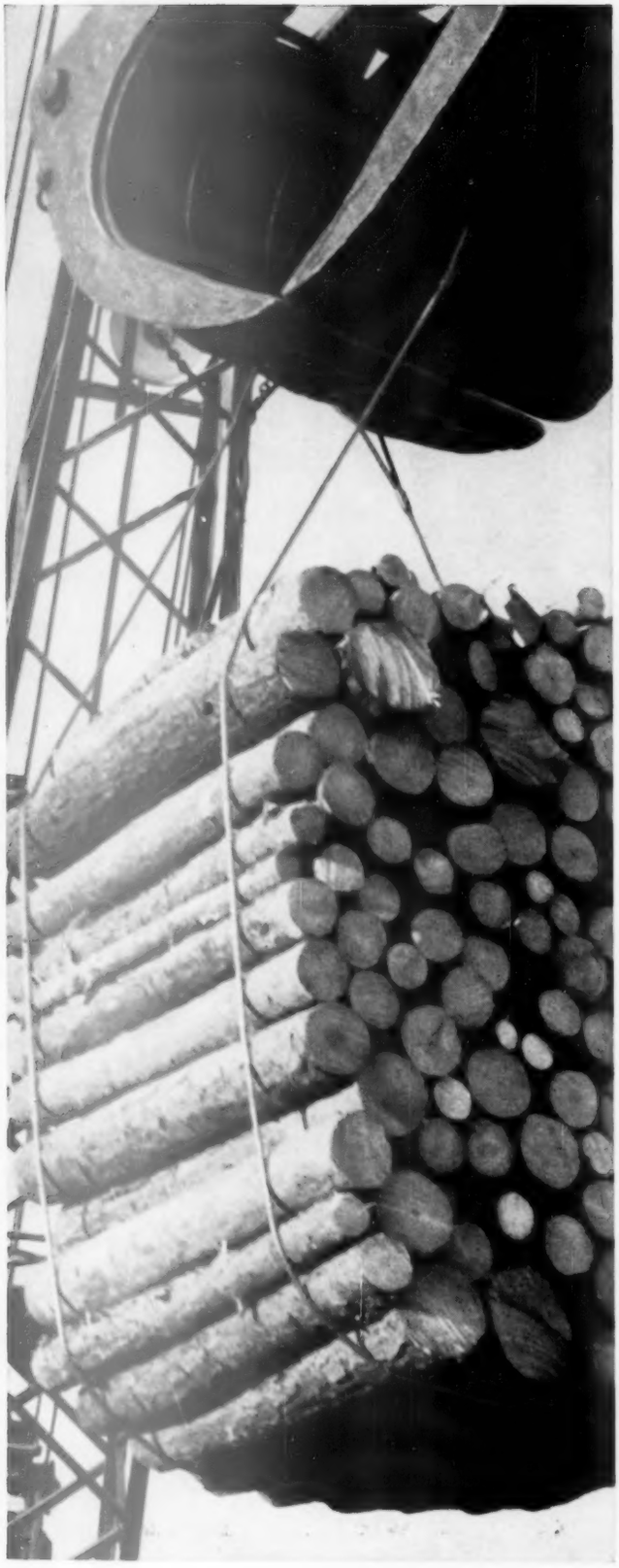
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

*Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.*



# Complete engineering and construction services for the pulp and paper industry

. . . not only for complete pulp and paper mills, but for any portion of a plant. In addition, we handle assignments ranging from wood yards to waste disposal systems. Our services are available on any contractual basis that meets your requirements.

Send for our booklet, "Engineering, Design and Construction for Industry." Address: Ebasco Services Incorporated, Dept. R, Two Rector Street, New York 6, N. Y.

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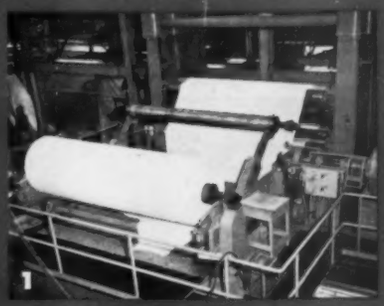
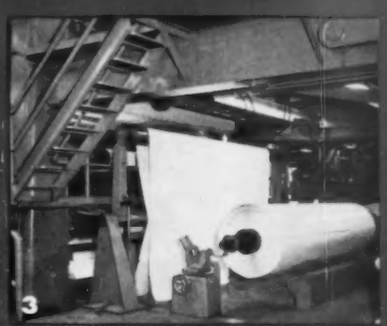
# The Mead Corporation uses NEWEST in Spool Transfers





**Appleton's push-button, automatically sequenced, Unwind and Windup is designed for efficiency . . . and *delivers* just that!**

Illustrations show the Mead Corporation, Chillicothe Division, installation of this newest of Unwind and Windup units on an Appleton supercalender.

Sequence photographs portray how: (1) Arms raise spool from unwind bearings and return to horizontal "park" position. (2) Parent roll is mechanically conveyed on dollies into unwind position. Spool is clamped in place pneumatically. (3) Wound roll is removed from windup stands by tilt top elevator. (4) Spool is lowered into windup bearing saddles. Arms automatically retract to "park."

*Your inquiries are invited and complete specifications will be furnished promptly upon receipt of basic data.*

**APPLETON MACHINE COMPANY**
**Appleton, Wisconsin**

# FLUIDICS* AT WORK

## Now . . . GLASTEEL pipe that you can field-cut

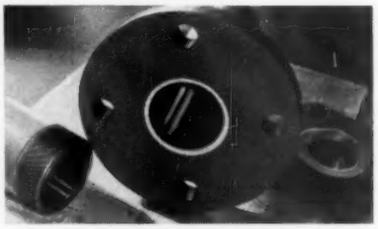
That's new Pfaudler F-C Glasteel pipe* you see being cut with a standard, dry abrasive cutoff wheel.

The F-C stands for "field cut." The pipe itself is steel on the outside for strength, borosilicate glass on the inside for corrosion resistance. Once you've cut the length you want, you thread and then fire-polish with a small, portable furnace. (Furnace available from Pfaudler at a modest cost that you will completely recover through savings in a few installations.) You finish the pipe end with a belt sander to make sure that the gasket seat is flat and the flange connection seal-tight.

Glass lining for this new pipe is ⅛ inch thick, so you can expect substantially longer service life even with corrosive and/or abrasive fluids. Rated at 150 psi and available in 1½, 2 and 3 inch diameters, F-C pipe can be used with all acids (except HF) to 350° F. and with all mild alkalies at moderate temperatures.

Moreover, since glass is inert, you will also find this pipe useful for those products which must be kept free from contamination. And note, too, that because glass is smooth, there's little chance for build-up with sticky materials.

Aside from the fire-polishing furnace, you will find the tools needed for handling F-C Glasteel pipe in most plant maintenance shops. There is no need to engineer a piping layout to the last ⅛ inch. Installation and modification are easy, and very little maintenance is required.



As of now, you can get limited quantities from stock in lengths through 10 feet. For Bulletin No. 989 or for answers to specific questions on availability and delivery, please write to our Pfaudler Division, Dept. PP-30, Rochester 3, N. Y.

*Patent applied for

## Why and how to get a combination heat exchanger

Suppose you want to concentrate sulphuric or nitric acid on the tube side, using high pressure steam on the shell side. What kind of heat exchanger would you select?

Faced with this problem, our answer was a *combination*—bonnets of Glasteel, tubes and tube sheet of tantalum, and a shell of carbon steel, as illustrated above.

**CHOICE OF MATERIALS.** This combining of materials of construction is something we are in a unique position to handle. For example, from Pfaudler you can get components made from stainless, GLASTEEL, nickel, Inconel, Monel, Hastelloy, and impervious graphite.

And now you can even get the special characteristics of components fabricated by us from titanium, tantalum, and zirconium.

**OPTIMUM DESIGN.** The intent of combining materials is to provide the optimum design in terms of heat transfer efficiency and corrosion resistance at the *lowest cost*.

Since our background and facilities cover this wide choice, you are sure that your needs are met with complete objectivity. Your product, your process, and your budget will point the way.

**YOU'RE INVITED.** What it ends up with is this invitation: Consult with us on your problem. We will then submit our recommendation on the right combination. Or get more background from our Bulletin No. 949.

**BUYERS' GUIDE.** Outlines our FLUIDICS program in terms of services and products for corrosioneering, water treatment, storage, agitation, etc. Send for your free copy.

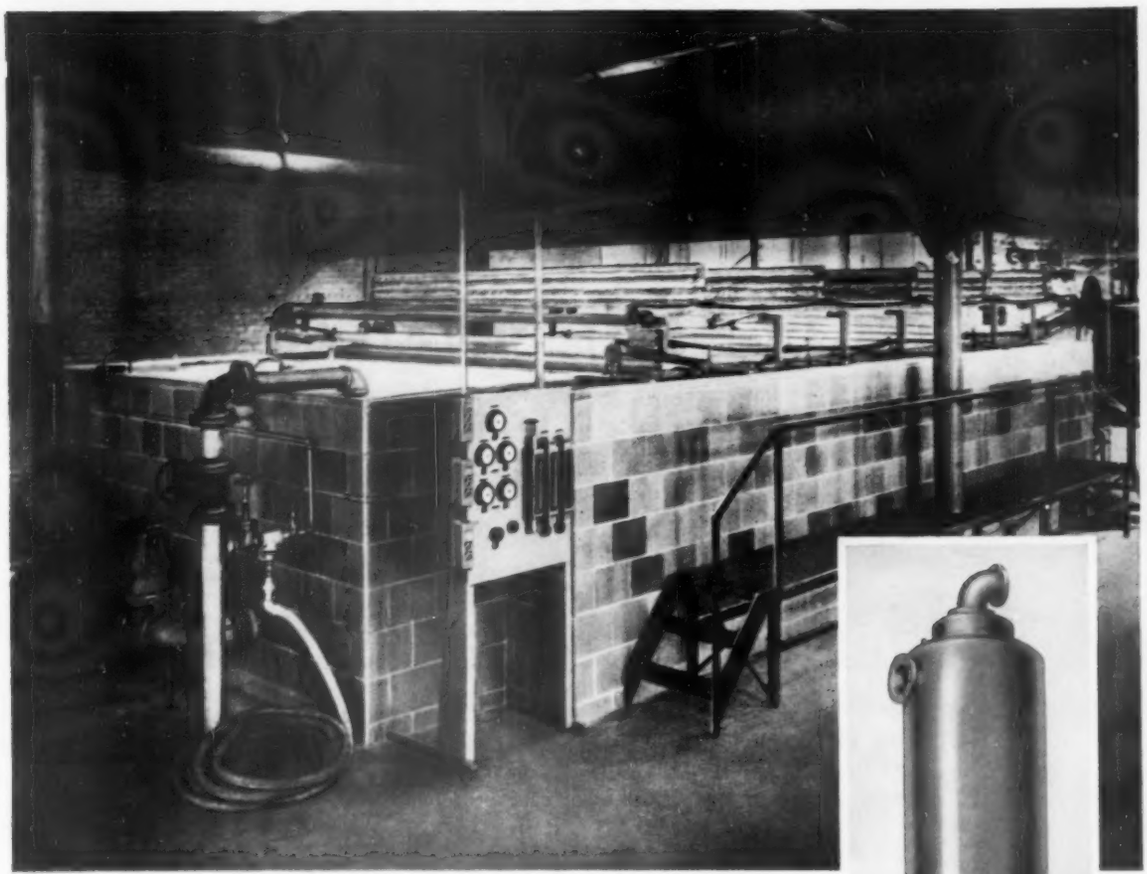
*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

**PFAUDLER PERMUTIT INC.**

Specialists in FLUIDICS . . . the science of fluid processes

# NOW MADE BY JONES...

## The Sveen-Pedersen Saveall with "Aqua-Air-Spray"*



"Aqua-Air-Spray"* Aeration Tank is automatic, simple, maintenance free. Drives more air into solution under pressure. Air-saturated white water is then released and distributed through either horizontal or vertical type Double Disk Inlet Valve*.

### Recovers fiber and filler more efficiently than ever

Long recognized as the world's finest flotation saveall unit, Sveen-Pedersen now increases its lead even further. Through a field-proven, revolutionary "Aqua-Air-Spray"* system, more than twice as much air as previously possible is *dissolved* into the white water. Millions of tiny air bubbles are made available to float the fiber and filler out of the solution.

As a result, S-P Saveall — now made by Jones — offers these important advantages: Greater fiber and filler recovery — faster and in higher concentration • Better water clarification • Reduces — or even eliminates — flocculent chemical dosage • Requires up to 20% less pump horsepower • Minimizes maintenance.

For full details on the reclaiming of expensive fibers and fillers, and effective solutions to stream pollution problems, write to E. D. Jones Corporation, Pittsfield, Mass. Ask for bulletin F-10.

*Patented

E. D. JONES CORP. member BELOIT group PITTSFIELD, MASS.

*Canadian Associates:*
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa

**Jones**

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

# PIONEERS IN PULP AND PAPER LOCATIONS

For more than a quarter of a century the development of the pulp and paper resources of the Seaboard Southeast has been one of our specialties. During this time we have assisted many of the country's leading pulp and paper companies which have built plants in this area.

# CHOICE SITES AVAILABLE

Over the years we have made intensive study of the territory and have catalogued for ready reference specific data on outstanding locations for the manufacture of pulp and paper as well as for converting plants. Reliable information on choice sites will be furnished interested prospects on request.

# SUPPLIERS TO THE INDUSTRY

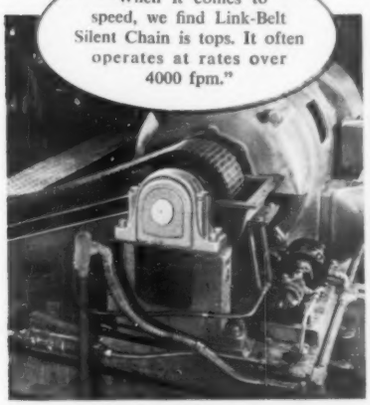
A plant or distribution facility in the Seaboard Southeast will place you in the heart of this rapidly-growing market. Let us submit details on some of the excellent sites strategically situated for supplying the pulp and paper industry.

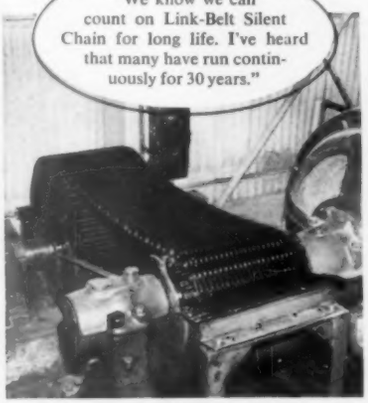
**Address in confidence:**

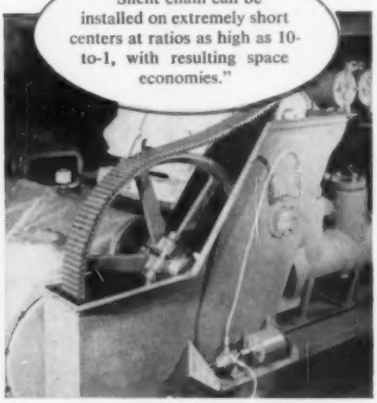
**Warren T. White**
**Assistant Vice President**
**Seaboard Air Line Railroad Company**
**Richmond 13, Virginia**

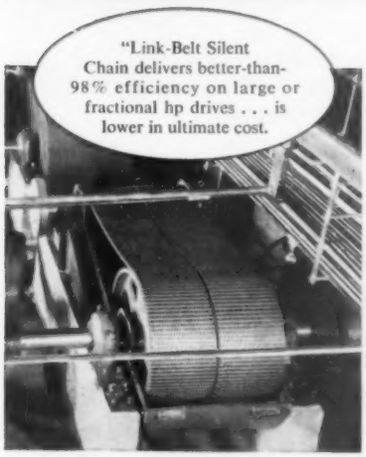
"Join me on a plant tour . . . see why

# we're modernizing our drives with Link-Belt Silent Chain"



LINK-BELT

SILVERSTREAK SILENT CHAIN DRIVES

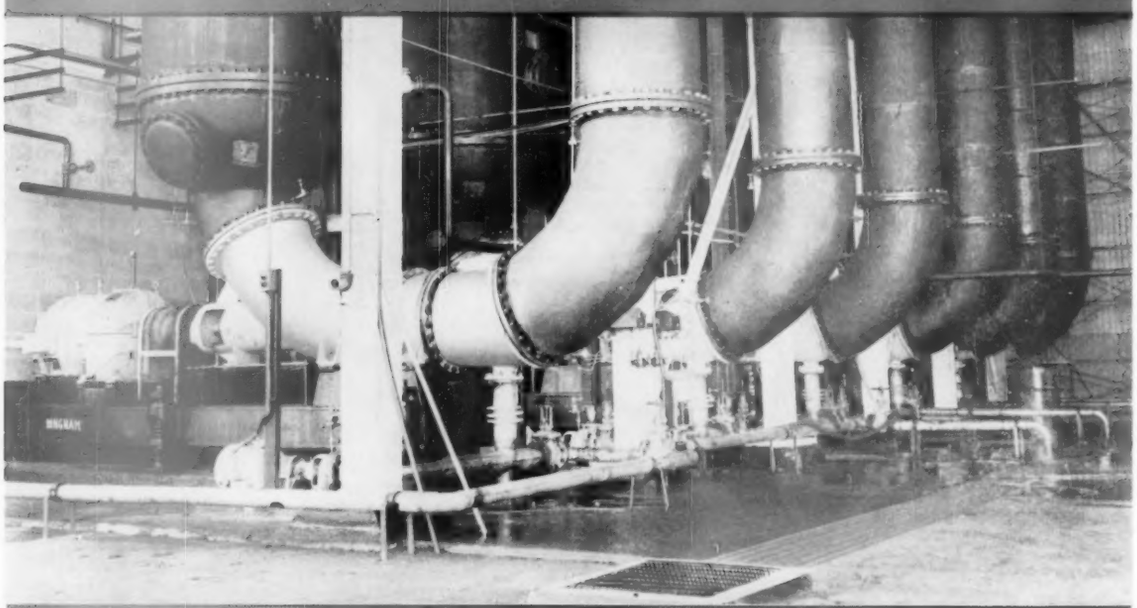
**FULL DETAILS** on Link-Belt Silent Chain are offered in 88-page Book 2425. Get your copy from your Link-Belt office or authorized stock-carrying distributor. Look under CHAINS in the yellow pages of your phone book.

**LINK-BELT COMPANY:** Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.

# Bingham

## "HI-LOW" CIRCULATING PUMP

## SPECIALLY DESIGNED FOR EVAPORATOR SERVICE

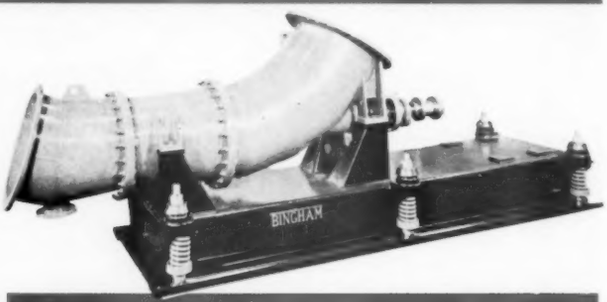


BINGHAM "HI-LOW" pumps with FLOATING BASES operating with evaporators, Weyerhaeuser Pulp Mill at Cosmopolis, Wash.

The minimum suction requirement of the Bingham "HI-LOW" Pump (NPSH) reduces the height of evaporators to a minimum with corresponding reduction in structural costs.

The BINGHAM "HI-LOW" PUMP is supplied with a special "FLOATING BASE", which eliminates excessive pipe strains on the pump case caused by temperature changes in operation. The "FLOATING BASE" also reduces foundation loading and eliminates the need for expensive and troublesome expansion joints.

The Bingham "HI-LOW" pump may be used to handle any fluid through evaporators or similar process—primarily designed for chemical recovery systems, may also be used for hot stock, white water transfer, waste liquor, sewage, etc.




Bingham "HI-LOW" pump with "FLOATING BASE"

Bingham SINCE 1921

DOUBLE VOLUTE PUMPS RADIAL BALANCE

BINGHAM PUMP COMPANY

*General Offices:* 2800 N. W. Front Avenue, Portland 10, Oregon

*Factories:* Portland, Ore. • Vancouver, B. C., Canada

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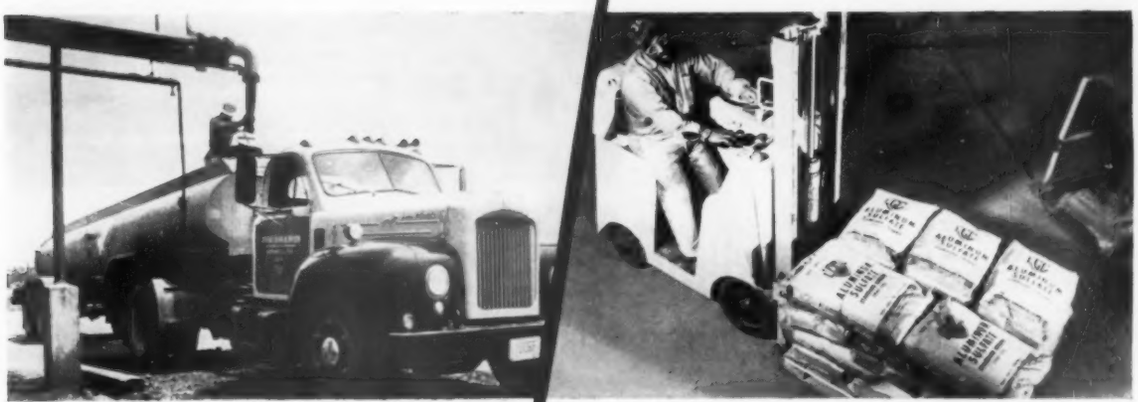
# ALUM

**liquid or dry**



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As one of America's primary producers of aluminum sulfate, General Chemical has established a network of strategically located plants from coast to coast. Those listed above can provide you with a close, convenient source of supply. These modern plants are located in the heart of active consuming areas. They facilitate service to you. They save transportation costs. In addition, our chain of warehouses across the country makes stocks of dry aluminum sulfate readily available everywhere. Write or phone today for further information on how these facilities can be put to work for you.

*Basic to America's Progress*

Allied Chemical

**GENERAL CHEMICAL DIVISION**

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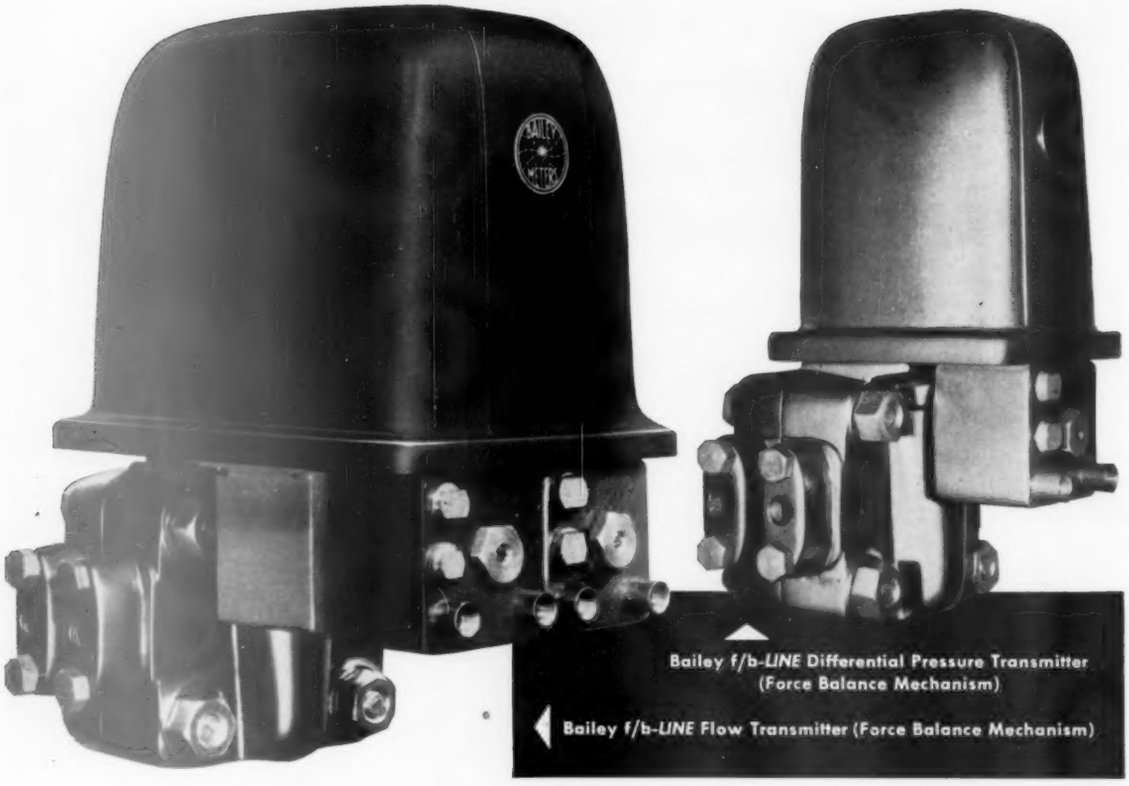
Bailey f/b-LINE Differential Pressure Transmitter
(Force Balance Mechanism)
Bailey f/b-LINE Flow Transmitter (Force Balance Mechanism)

# Two new Bailey *f/b-LINE* Transmitters

## permit new accuracy in measuring flow and differential pressure

Pneumatically transmits rate of flow—or differential pressure—measurements to indicating, recording, and/or controlling equipment at remote stations. Transmitters consist of a diaphragm measuring mechanism and a force balance pneumatic transmitting unit.

### APPLICATION

For steam, water, air, gases and other fluids producing differentials across primary elements from 0-2 in. $H_2O$ to 0-2000 in. $H_2O$ at maximum service pressure of 50, 1500, and 5000 psig.

### FEATURES

**Transmits a Signal Directly Proportional to Rate of Flow.** Uses receiver with uniformly-graduated chart or scale. Eliminates need for external square-root extractors or characterizers.

**10 to 1 Turndown.** Differential range of each diaphragm measuring element may be changed by factor of 10 to 1; e.g., 0-20 in. $H_2O$ diaphragm may also measure 0-2 in. $H_2O$.

**Screwdriver Adjustments.** Range and zero adjustments readily accessible. Range may be changed with screwdriver adjustment.

**Overpressure Protection.** Protects against full service pressure applied to either side of diaphragm.

**Fast Response.** No viscous dampers needed, so speed of response is very fast.

**Corrosion Resistant.** For maximum differentials between 20 and 2000" $H_2O$, all parts in contact with process fluid may be stainless steel. No sealing fluids or sealing diaphragm required.

**Good Stability.** Reset type boosters give good stability with high gain.

**Versatile Mounting.** May be mounted on process piping, wall, or separate mounting pipe using same bracket.

For additional information, call your local Bailey District Office, or write direct.

P46-1

*Pulp and paper division*

**BAILEY METER COMPANY**

*1037 IVANHOE ROAD • CLEVELAND 10, OHIO*

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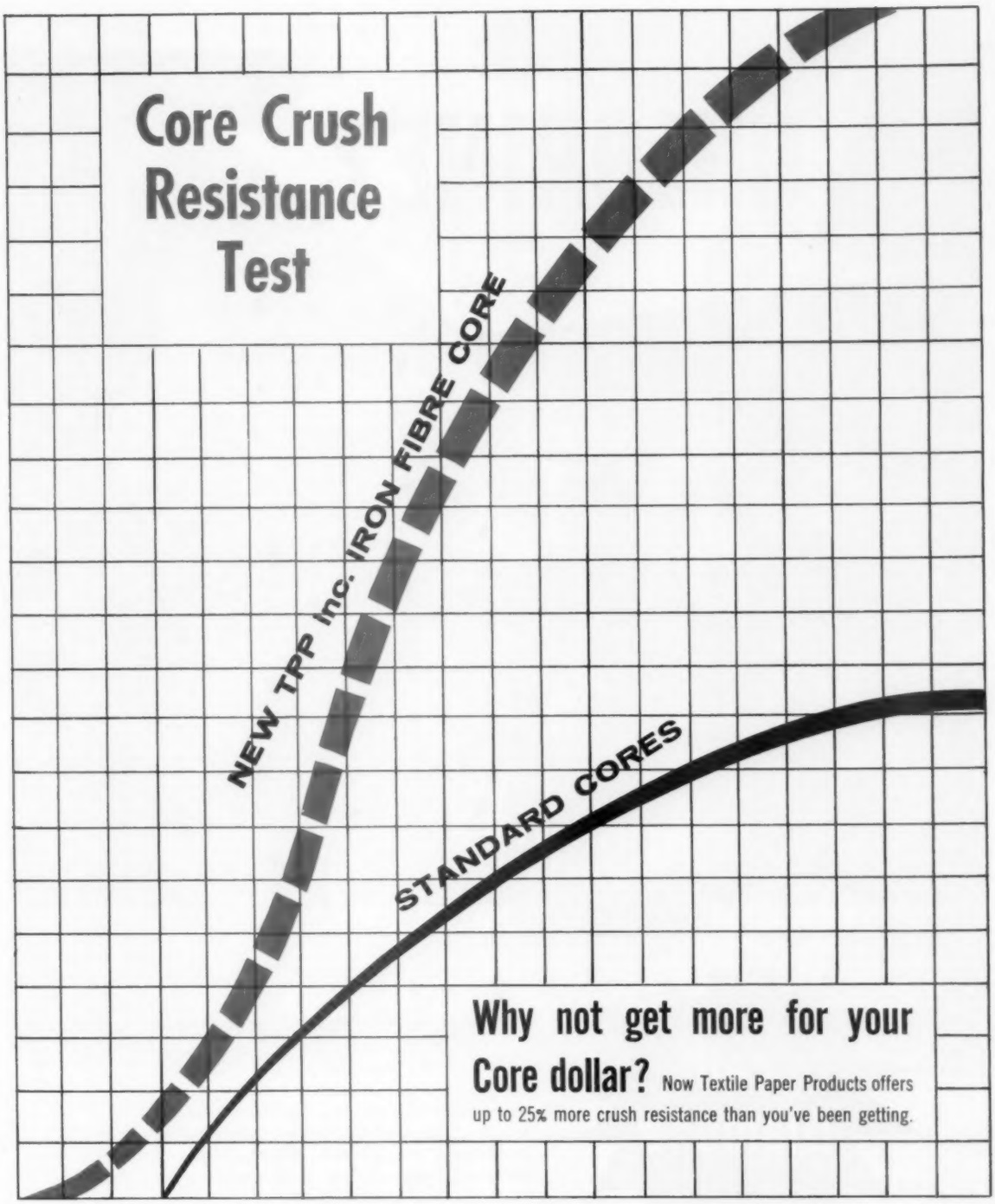
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NEW TPP Inc. IRON FIBRE CORE*
STANDARD CORES
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**Chlorine Plants:** Edgewood, Md. • Deer Park, Texas • Muscle Shoals, Ala. • Painesville, Ohio.

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**Diamond Chemicals**

Dispenses all lubricating oils up to 25,000 SSUV at 100° F.

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# new

ALEMITE OIL-MIST SYSTEM WITH

## thermo-aire

*Now! Automatic Lubrication for:*

*Heavy-duty bull gears!*

*Heavily loaded plain bearings!*

*Heavy-duty chains!*

*Heavy-duty slides and ways!*

*Largest size anti-friction bearings!*

Now even your heavy-duty bearing surfaces can be lubricated continuously and automatically with the required high viscosity oils! An exclusive new "Thermo-Aire" feature on Alemite's Oil-Mist System preheats incoming air. This preheated air permits the atomization of the heaviest straight mineral oils.

The "Thermo-Aire" unit brings all the advantages of Alemite Oil-Mist to heavy-duty lubrication. You get automatic, continuous lubrication . . . eliminate guesswork, cut oil consumption (up to 90%). You prevent product damage caused by oil drippings, extend bearing life, eliminate waste, save manhours, get greater safety, eliminate machine downtime and reduce the number of lubricants needed.

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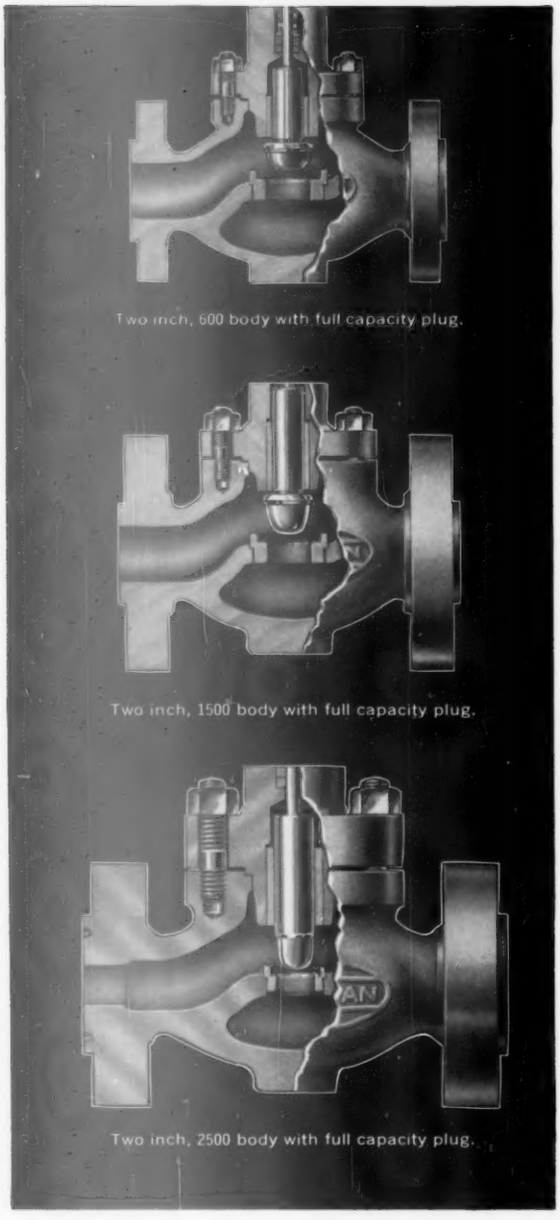
# Masoneilan 20000 Series Control Valves



Two inch, 600 body with full capacity plug.

Two inch, 1500 body with full capacity plug.

Two inch, 2500 body with full capacity plug.

## The Most Versatile Single Seated Valves Available

With the introduction of this new line of solid-cast control valves the advantages of single seat design become available for a substantially wider scope of application, from the simple to the most severe. Consider these premium features built in as standard, available to you at no extra cost.

- **High Capacity** — top guiding, unrestricted seat ring area, body and plug contours provide greater capacity than most top-and-bottom-guided double seated valves of comparable sizes.

- **High Pressures and Pressure Drops** — high capacity is attained with minimum seat ring areas, resulting in less unbalance force, permitting higher pressure drops. Heavy guiding throughout full stroke results in a minimum of unsupported plug length and allows high pressure and high pressure drop applications without lateral vibration. Generous guide surfaces and large plug stems are sized in accordance with body rating.

- **Wide Selection of Reduced Capacity Trim** — for those applications where velocity due to high drop is a consideration (or where future requirements for larger capacity are a factor) a wide selection of reduced capacity trim is available — and interchangeable in comparable valve sizes and ratings (see table). The proper relationship between stroke and trim size is maintained in order to provide the strongest possible plug tip, particularly in hard, brittle materials.

| Valve Size | Available $C_v$ Ratings | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ¾ | 1.5 | 3.2 | 5.4 | 8 | | | | | | | |
| 1 | 1.5 | 3.2 | 5.4 | 12 | | | | | | | |
| 1½ | 1.5 | 3.2 | 5.4 | 12 | 25 | | | | | | |
| 2 | 1.5 | 3.2 | 5.4 | 12 | 25 | 46 | | | | | |
| 3 | | | | 12 | 25 | 46 | 110 | | | | |
| 4 | | | | | 25 | 46 | 110 | 195 | | | |
| 6 | | | | | | 46 | 110 | 195 | 400 | | |
| 8 | | | | | | | 110 | 195 | 400 | 640 | |
| 10 | | | | | | | | 195 | 400 | 640 | 1000 |

Two inch, 600 lb. valve has size 11 actuator.

Two inch, 1500 lb. valve has size 13 actuator.

Two inch, 2500 lb. valve has size 15 actuator.

**Wide Selection of Materials** — the design of body and plug permits the use of suitable special materials to meet severe operating conditions.

**Suitable for Slurries** — body and plug contours (plus the fact that no bottom guiding is required) make these valves suitable for viscous fluids and slurries.

**Welding Ends Available** — the solid-cast body allows the use of welding ends. The removable bolted bonnet permits easy (only one joint to break) inspection or cleaning with valve in the line.

**Actuators Sized to Body Rating** — the standard spring-diaphragm (direct or reverse) actuator is sized according to body rating, thus minimizing requirements for oversize actuators in severe applications. Where extra high initial or final thrust is desirable, the judicious selection of actuator size and spring range enables the spring-diaphragm actuator to be used in most instances. For applications beyond the scope of the spring-diaphragm type, springless-diaphragm, cylinder or electric drive actuators are available.

**SPECIFICATIONS** — **Sizes:** ¾", 1", 1½", 2", 3", 4", 6", 8", 10"
**Ratings:** Steel — 150, 300, 400, 600, 900, 1500, 2500 lb. ASA
Iron — Class 125 or 250 ASA
**Connections:** Screwed ends — ¾"-2" in 600 lb. and Class 250 rating
Flanged — ¾"-10"
Welding ends available on steel valves.
Face-to-face dimension is I.S.A. standard.

If you are concerned with control valve selection, it will pay you to investigate the high performance, low cost 20000 Series. Get in touch with a Mason-Neilan representative or write

MASONEILAN

# MASON-NEILAN

Division of Worthington Corporation
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MNO-1

*SCRIPTITE, LYTRON: Reg. U.S. Pat. Off.

Both hard and slack sized boards are today being laminated with Scriptite 54 adhesive. This water insoluble copolymer works efficiently in conventional laminating systems, producing laminated board that passes 48-hour and longer immersion periods with no delamination. Even when the laminate is forcibly separated, there's a complete fiber pull, no separation at the glue line. With 54, there's no need for heat or long storage curing periods —glue line water resistance sets immediately. For samples and new report, "Laminating Paperboard and Liner Board with Scriptite 54," write: Monsanto Chemical Company, Plastics Division, Room 739, Springfield 2, Mass.

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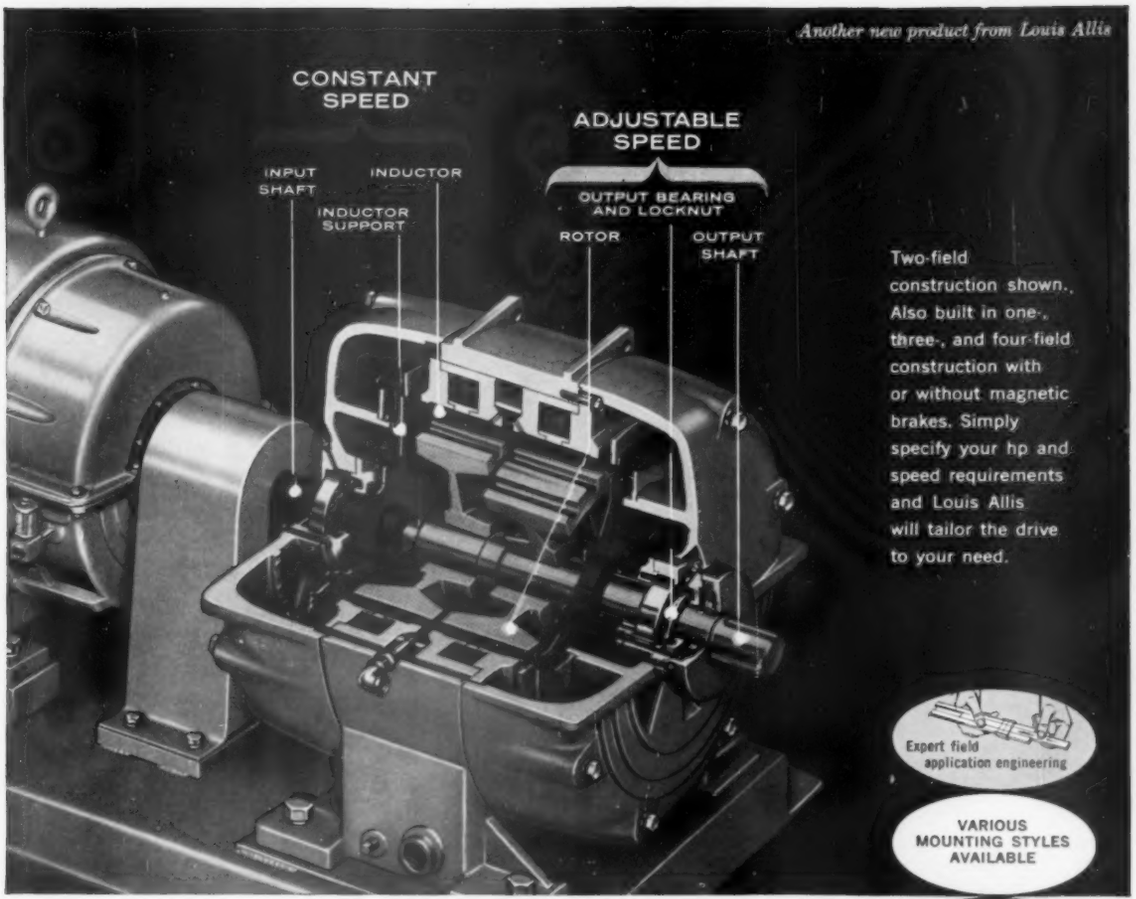
*The Monsanto line of paper resins also includes*

**SCRIPTITE 40** *urea type wet-strength resin.* **SCRIPTITE 33** *melamine wet-strength resin.* **SCRIPTITE 55** *low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*


Another new product from Louis Allis
CONSTANT SPEED
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Two-field construction shown. Also built in one-, three-, and four-field construction with or without magnetic brakes. Simply specify your hp and speed requirements and Louis Allis will tailor the drive to your need.
Expert field application engineering
VARIOUS MOUNTING STYLES AVAILABLE

# The new Louis Allis MAGNETIC DRIVE

## A compact, adjustable speed drive up to 2000 hp!

Based on a liquid-cooled magnetic coupling design, the *all-new* Louis Allis Magnetic Drive offers you the finest in precise regulation, compactness, and design flexibility for adjustable speed drives up to 2000 hp.

A unique annular cooling manifold provides effective heat transfer. It eliminates "water-drag" since there is *no* liquid in the air gap between the constant-speed and adjustable-speed members. There's no "flooding" the Magnetic Drive or forcing of water into bearings. And you'll *never* find condensation in the bearings. The reason: a planned flow of air through the drive reduces bearing temperatures and exhausts any condensation which might occur as the unit cools off after use.

Stationary field construction eliminates slip rings. All bearings can be lubricated without disassembly, and grease chambers provide ample grease reservoirs. Coils and lead connections are encapsulated in a chemical- and heat-resistant polyester — and simplified construction eases inspection and servicing. The *all-new* design permits simple relocation of cooling inlet, conduit box, discharge, etc., regardless of direction of rotation.

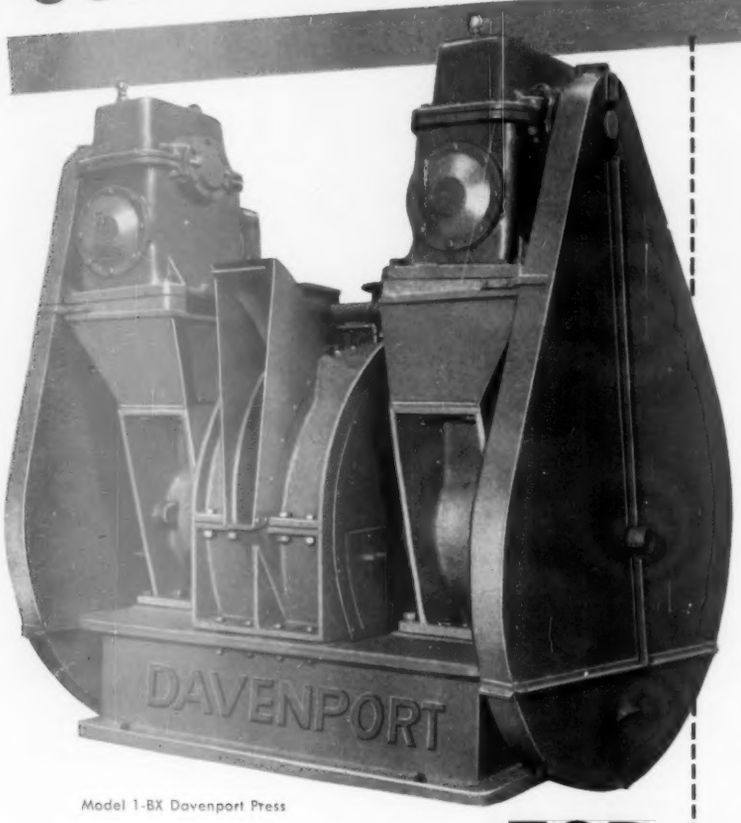
If your plans call for adjustable speed drives — specify Louis Allis Adjustable Speed Magnetic Drive. Write for a copy of Bulletin 3650 — now available at your Louis Allis District Office, or from The Louis Allis Co., 444 E. Stewart Street, Milwaukee 1, Wisconsin.

**LOUIS ALLIS**

MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES

ASD-135

# CONTINUOUS DEWATERING...




Model 1-BX Davenport Press

# FOR HIGH CONSISTENCY PULP

Davenport Continuous Presses extract water from fibrous materials such as various grades of waste paper stock, kraft, sulphite or groundwood pulp. The Model 1-BX has been developed to obtain high consistencies. Several Model 1-BX Davenport Presses are now in operation at the Waldorf Paper Products Company plant in Missoula, Montana, dewatering kraft pulp from a consistency of 10% to approximately 45%. Capacity of each unit runs about 75 tons each 24 hours, bone-dry basis.

The wet pulp entering the press is squeezed and dewatered as it passes through the press, and the squeezed out water escapes through the screen plates and drains off at the bottom of the press. There are practically no fiber losses. The pulp is handled very gently by the press which operates at low speed. Therefore no "fish eyes" are formed in the pulp during the dewatering.

The Model 1-BX Davenport Press is driven by separate, synchronized variable speed motors, and operates very efficiently with low power consumption, high capacity, and low maintenance cost. Inquiries receive prompt attention.

**AMERICAN DEFIBRATOR, INC.** CHRYSLER BUILDING NEW YORK 17, N. Y. West Coast: A. H. Lundberg Mercer Island, Washington

YOU CUT EVAPORATOR COSTS HERE
inside your pulp washer drum!
Drain from leading and trailing edges
Perforated steel deck
Center discharge
Deep sloping channels

A better hydraulic system resulting in more effective use of drum surface is the principal reason why Swenson pulp washers require less dilution to obtain clean pulp. And lower dilution means lower evaporator costs.

Swenson pulp washers pick up a thicker sheet of pulp, permitting lower drum speeds and greater drainage time. The patented Swenson channels are sloped to the center with liquor drainage on both the leading and trailing sides. These features provide the most effective use of the drum area assuring low dilution operation.

**SEND for more FACTS** on the cost-cutting Swenson pulp washer. Write for bulletin E-108, "Pulp Mill Equipment," today. *Swenson Evaporator Company, 15653 Lathrop Avenue, Harvey, Illinois*

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# DeZURIK STOCK CONSISTENCY REGULATORS

These are three of the eight DeZurik Regulators in an installation engineered by Charles T. Main, Inc., for the Chillicothe Paper Co. in Ohio on their No. 4 paper machine.

These DeZurik Regulators are designed to handle the full volume of stock—not just a sample.

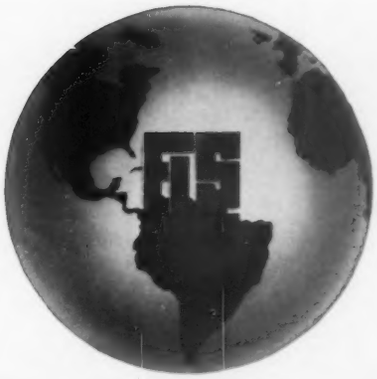
DeZurik Consistency Regulators have a long record of accuracy, proved in performance. They're guaranteed to hold consistencies within limits of plus or minus .1%, and many of them installed directly ahead of paper machines are holding consistencies to plus or minus .02%!

They're versatile, too! Three basic types of DeZurik Regulators adapt to a wide variety of installations such as regulating stock after high density storage chests, after broke pulpers, couch pit wet broke control, brown stock washing systems, basis weight, stock metering systems and refining systems. There's a DeZurik Regulator to fit almost every installation and to handle a wide range of tonnages.

With quality control becoming increasingly important in paper mills, the accuracy of a DeZurik Stock Consistency Regulator is your guarantee that—without constant attention—without costly maintenance—you can achieve precise consistency control.

For more information on DeZurik Automatic Recording Stock Consistency Regulators, please write

DeZURIK CORPORATION
SARTELL, MINNESOTA



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## rotary kilns

## For Reburning Lime Sludge

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**Over 1,250 Smidth rotary kilns have been furnished all over the world.**

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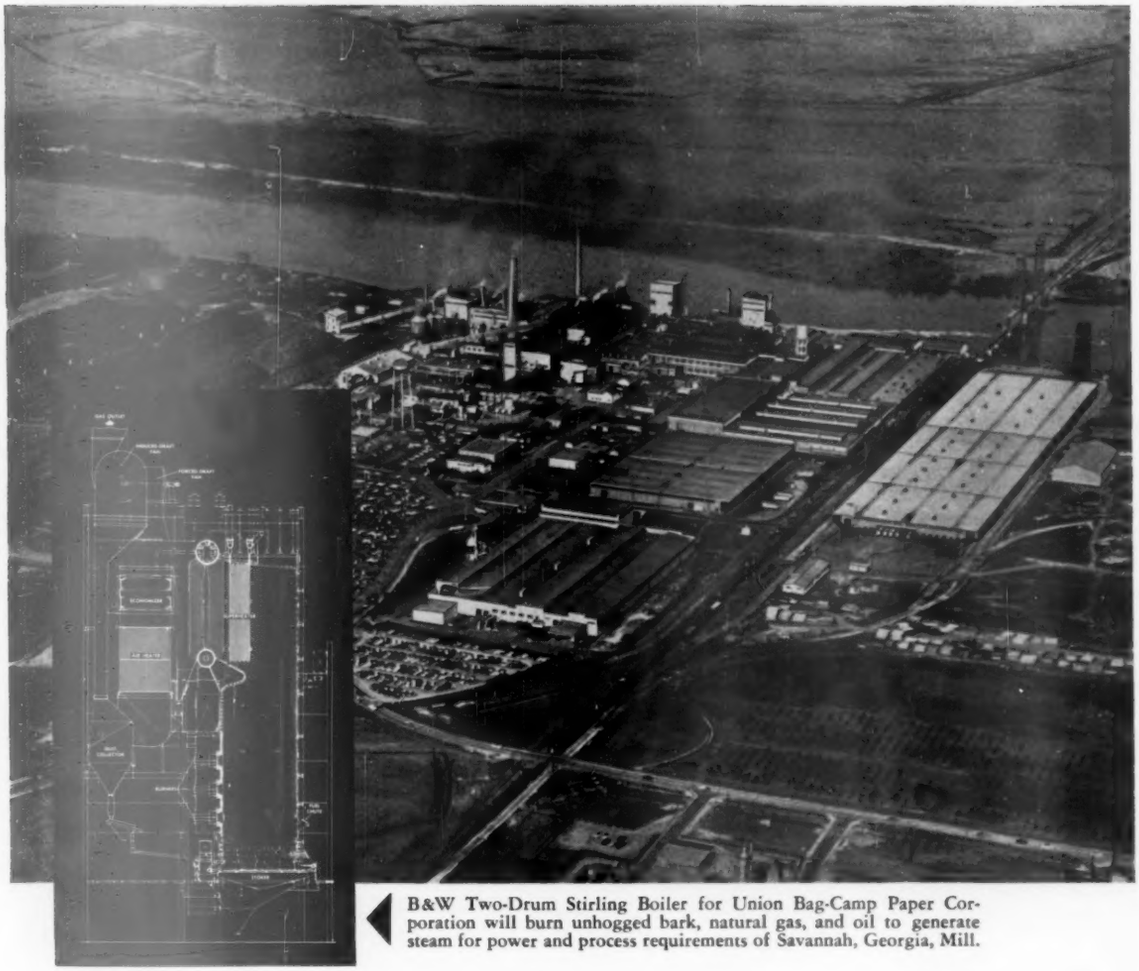

B&W Two-Drum Stirling Boiler for Union Bag-Camp Paper Corporation will burn unhogged bark, natural gas, and oil to generate steam for power and process requirements of Savannah, Georgia, Mill.

# Why America's Largest Bark-Burning Boiler is a B&W Boiler

The highest rated bark-burning boiler ever built will soon be generating 550,000 pounds of steam per hour at Union Bag-Camp Paper Corporation's huge mill at Savannah, Georgia. It will burn unhogged bark as a primary fuel but can also be fired with natural gas or oil—singly or in combination with the other fuels. The unit has a design pressure of 1250 psi at the superheater outlet and will operate at 950 F.

The designer and manufacturer? Babcock & Wilcox. Long associated with burning all kinds of fuel for steam generation, B&W has proved time and again its ability to supply dependable and efficient boilers of every size to burn every conceivable kind of fuel. And B&W's manufacturing capacity and know-how assure quick and dependable delivery schedules. That's why profit-minded steam users everywhere choose B&W to solve their fuel burning and steam generating problems.

If you're looking for ways to increase boiler efficiency and achieve fuel economies that will increase your profits, your first step is a talk with B&W. Contact your local B&W sales engineer or write The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

P-822

B&W THE BABCOCK & WILCOX COMPANY

BOILER DIVISION

Now you can keep solids up
viscosity down with

DEWEY AND ALMY'S
# flotrol C
PAPER COATING LATEX
*(formerly Darex Latex C)*

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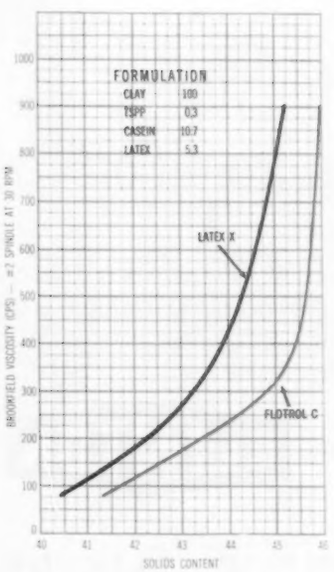


**GRAPH OFFERS SOLID EVIDENCE** that FLOTROL C gives lower coating viscosity. Viscosity reduction can be achieved in a wide variety of formulations—including casein, soya protein and starch—and with widely varied latex content. Consistently lower viscosity of FLOTROL C colors at high solids means better all-round results . . . saves drying time, too.

**Here's the answer to lower viscosity coating! With FLOTROL C you can formulate safely with a much higher solids content—yet keep viscosity way down. What's more, you get faster coating . . . quicker, more economical drying as well.**

**Use FLOTROL C in high solids formulations for high shear coaters like transfer roll and trailing blade. Use FLOTROL C in low solids formulations for air knife and reverse roll coaters, too.**

**Either way, the low pattern characteristics of FLOTROL C mean smoother, more uniform coatings—plus a high degree of gloss with less calendering.**

**To get the full story, write to us, attention Organic Chemicals Sales, at the address below.**

## CHECK THESE 5 BIG ADVANTAGES OF FORMULATING WITH FLOTROL C

**■ higher solids content for faster coating, heavier coating weights, less heat for drying ■ lower pattern for smoother, more uniform coverage ■ cuts amount of expensive ingredients needed to achieve desired fluidity ■ permits achievement of desired viscosity with less latex ■ means faster screening and preparation of coating color**

W. R. GRACE & CO.
DEWEY AND ALMY CHEMICAL DIVISION
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**24 HOURS A DAY**

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When you need a starch or dextrin, check with *Clinton* first. Clinton's complete line of starches and dextrins designed for paper mill applications can mean better paper for you.

**CLINTON TECHNICAL SERVICE** is freely available upon request.

CLINTON

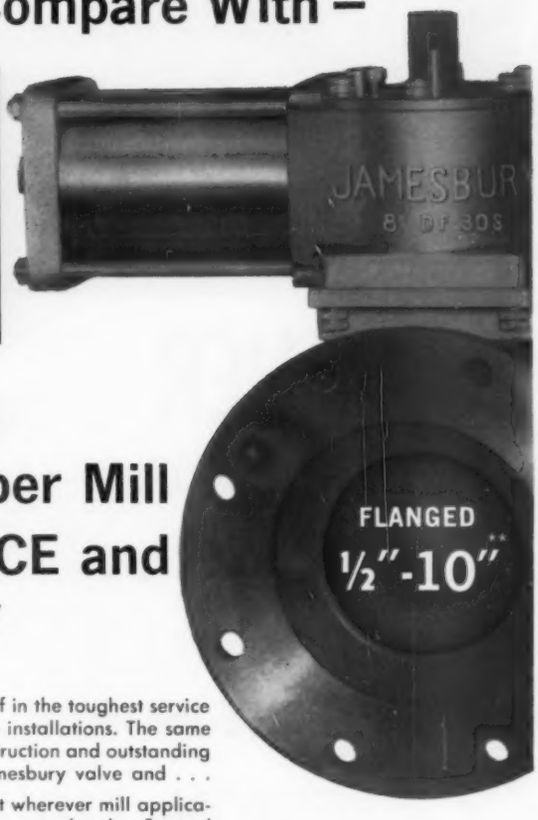
**CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA**

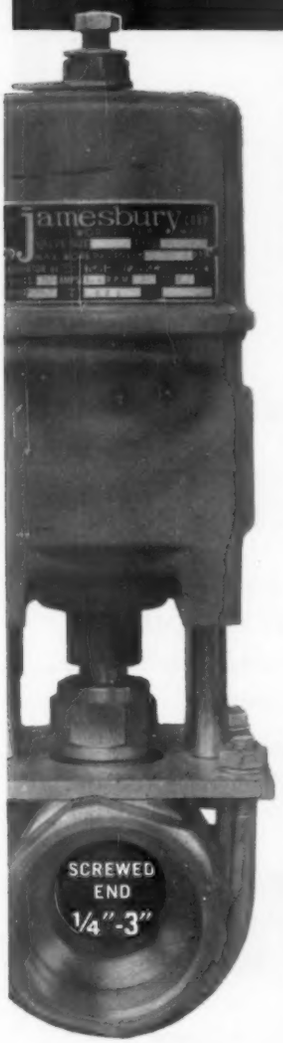
You **know** we have outstanding valves

– but remember –

# No Other Valve Can Compare With –

**Jamesbury "Double-Seal" BALL VALVES**



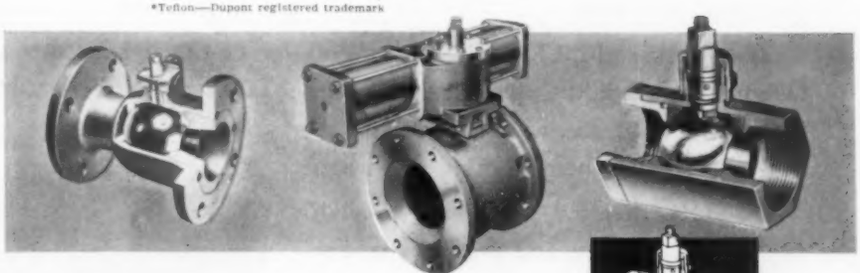

## In All-Around Pulp and Paper Mill PERFORMANCE and VERSATILITY

The Jamesbury valve is proving itself in the toughest service in the paper mill . . . Digester Blow installations. The same dependable efficiency, rugged construction and outstanding performance is built into every Jamesbury valve and . . .

There's a Jamesbury ball valve to fit wherever mill applications call for a quick ON-OFF valve, screwed end or flanged type, manually or remotely operated, in the ¼" through 10"** size range. Jamesbury's range of valve materials is equally impressive: 303 and 316 Stainless Steel, Alloy 20, Carbon Steel, Bronze, Ductile Iron, Aluminum and PVC. Interchangeable seats and seals are available in "Teflon",* Nylon, Buna-N, Neoprene, Hypalon and natural rubbers.

**Consult factory on availability of 12"

*Teflon—Dupont registered trademark



Pneumatic, Hydraulic and Electric Motor Operators to fit Remote Control requirements.

*Send for Jamesbury's Pulp and Paper literature.*

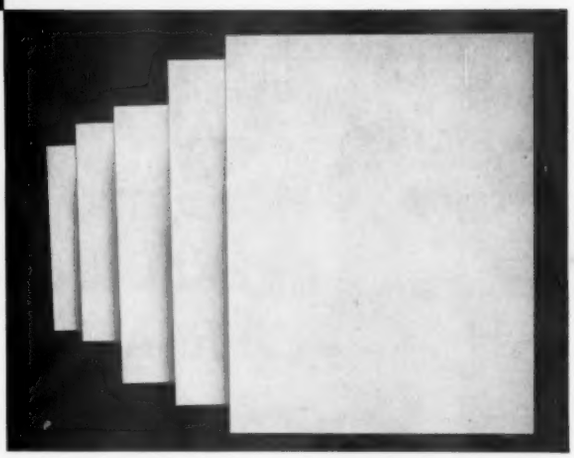
**JAMESBURY CORP., 46 NEW STREET, WORCESTER, MASS.**

*Distributors in Principal Cities*

508-9

# CLEANER FIBERS....

# CLEANER PAPER....



***WHEN YOU DE-INK WITH...***

## d-i LESTOIL LIQUID DETERGENT

Yes, d-i LESTOIL assures you of cleaner, more flexible fibers, a cleaner, better quality sheet with more uniform color from all grades of raw stock . . .

. . . because d-i LESTOIL thoroughly wets out the stock, dissolves, emulsifies and disperses ink, grease, wax, asphalt and adhesives . . . makes them miscible with water.

LESTOIL destroys the adhesive qualities of contaminants and prevents their redeposition in fibers, on wires and felts, or elsewhere in the system. d-i LESTOIL keeps your whole system clean and free-flowing . . . the result, a cleaner sheet!

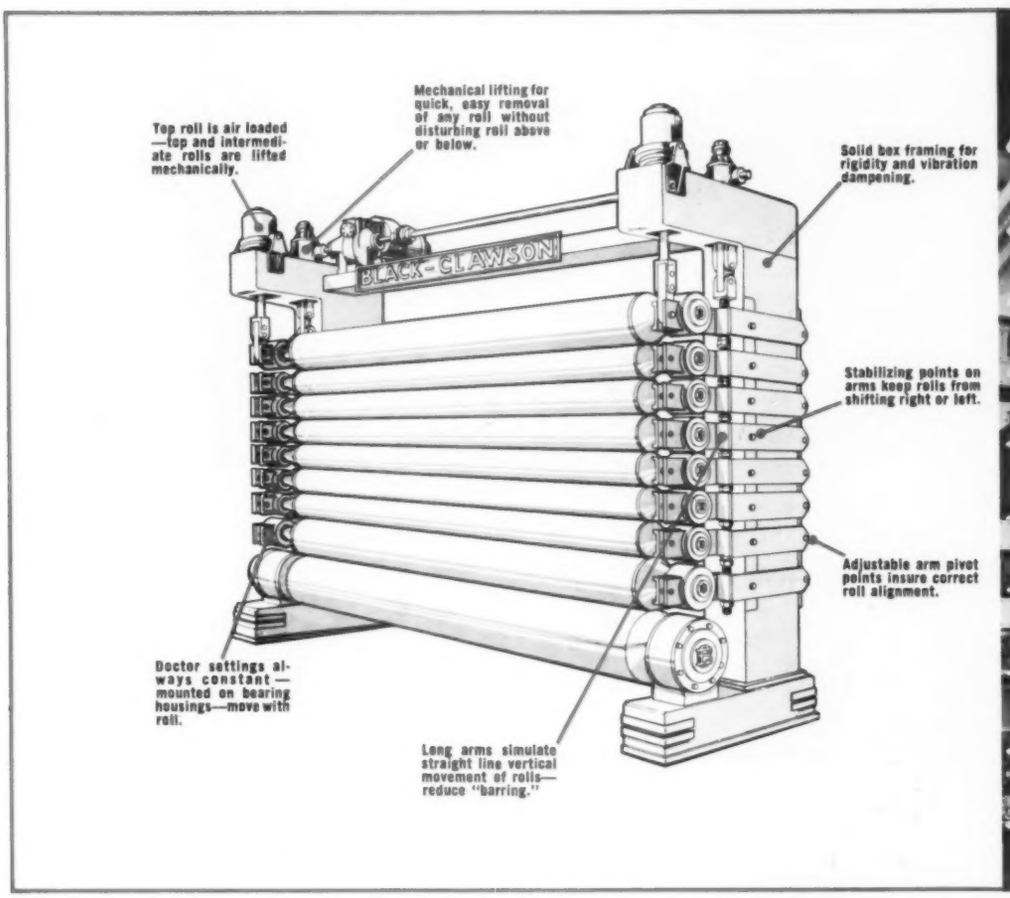
FREE, a generous sample of d-i LESTOIL and full details — yours for the asking. Write today

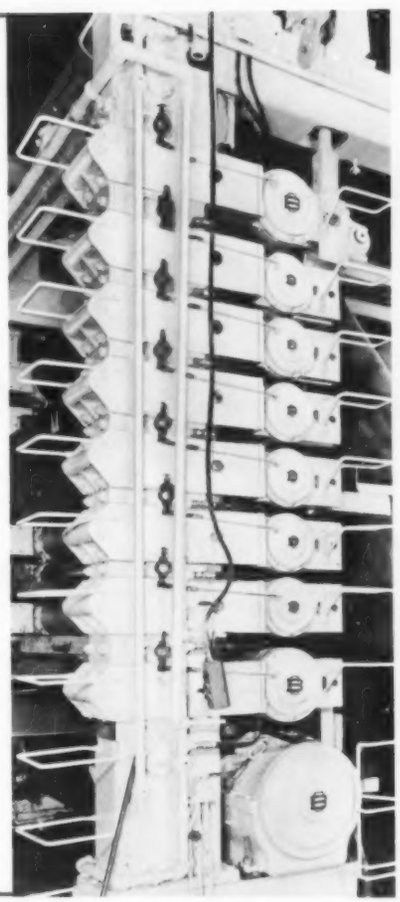
P.S. d-i LESTOIL is ideal for washing felts, too—on or off the machine.

**LESTOIL, INC.**

123 GARFIELD STREET
**HOLYOKE, MASS.**
a subsidiary of Adell Chemical Co.

# Advanced Design Open Side Calender


Top roll is air loaded —top and intermediate rolls are lifted mechanically.
Mechanical lifting for quick, easy removal of any roll without disturbing roll above or below.
Solid box framing for rigidity and vibration dampening.
BLACK-CLAWSON
Stabilizing points on arms keep rolls from shifting right or left.
Adjustable arm pivot points insure correct roll alignment.
Doctor settings always constant — mounted on bearing housings—move with roll.
Long arms simulate straight line vertical movement of rolls—reduce "barring."



A papermaker interested in a modern calender that is easy to operate and maintain will instantly recognize and appreciate the superior design features of this open side calender.

This modern open side calender is part of Black-Clawson's comprehensive advanced design standardization program for all paper machine components. Used as single or double stacks, this rugged calender stack is built in three basic sizes to suit large, medium or small machine requirements. Plan now to learn more about it. Call or write...

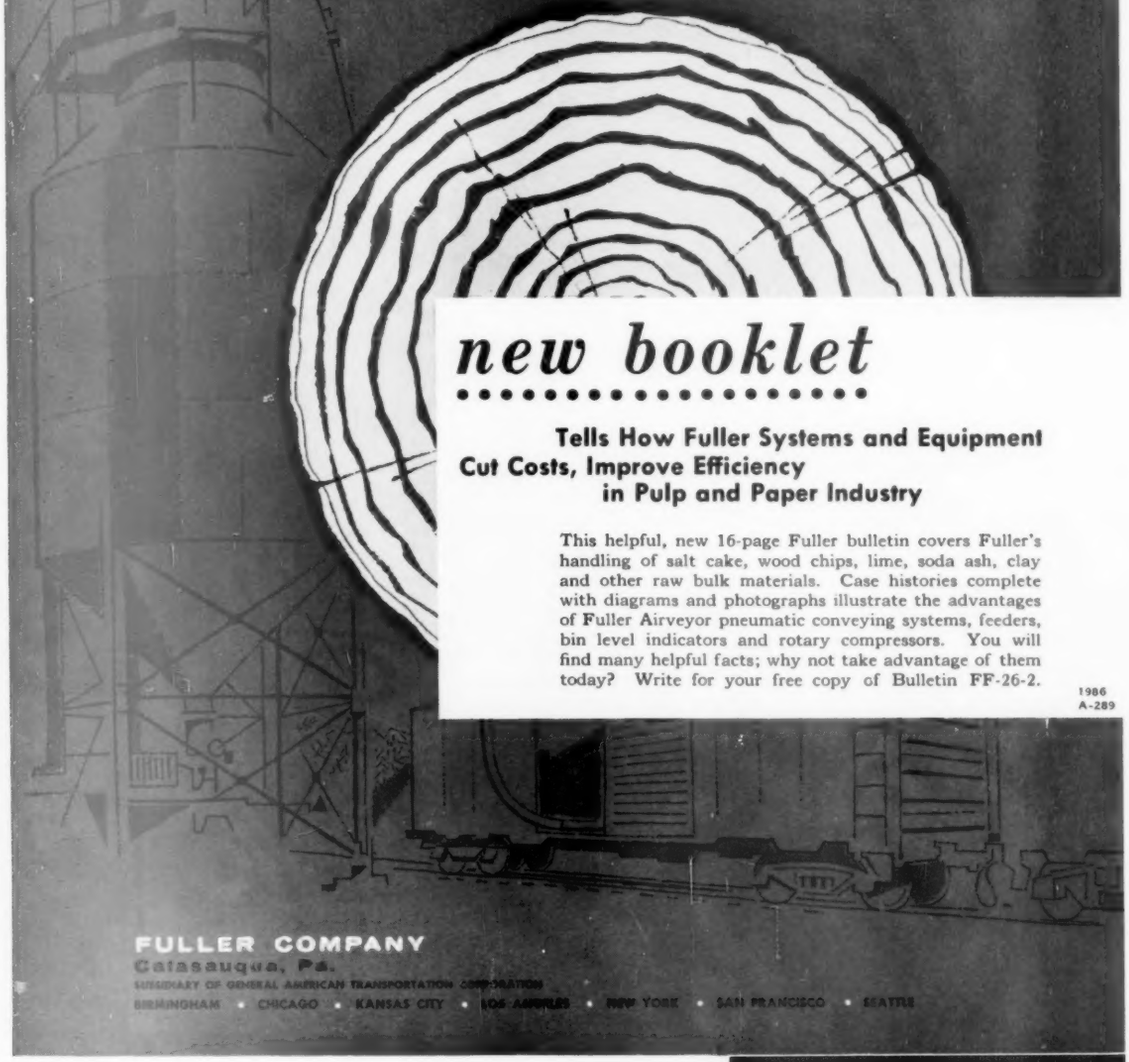
**The Black-Clawson Company**
**Paper Machine Division, Watertown, N. Y.**

***Another Advanced Engineering Design***

**BLACK-CLAWSON**

Bulletin FF-26-2

# FULLER EQUIPMENT for the PULP and PAPER INDUSTRY



## *new booklet*

**Tells How Fuller Systems and Equipment Cut Costs, Improve Efficiency in Pulp and Paper Industry**

This helpful, new 16-page Fuller bulletin covers Fuller's handling of salt cake, wood chips, lime, soda ash, clay and other raw bulk materials. Case histories complete with diagrams and photographs illustrate the advantages of Fuller Airveyor pneumatic conveying systems, feeders, bin level indicators and rotary compressors. You will find many helpful facts; why not take advantage of them today? Write for your free copy of Bulletin FF-26-2.

1986
A-289

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Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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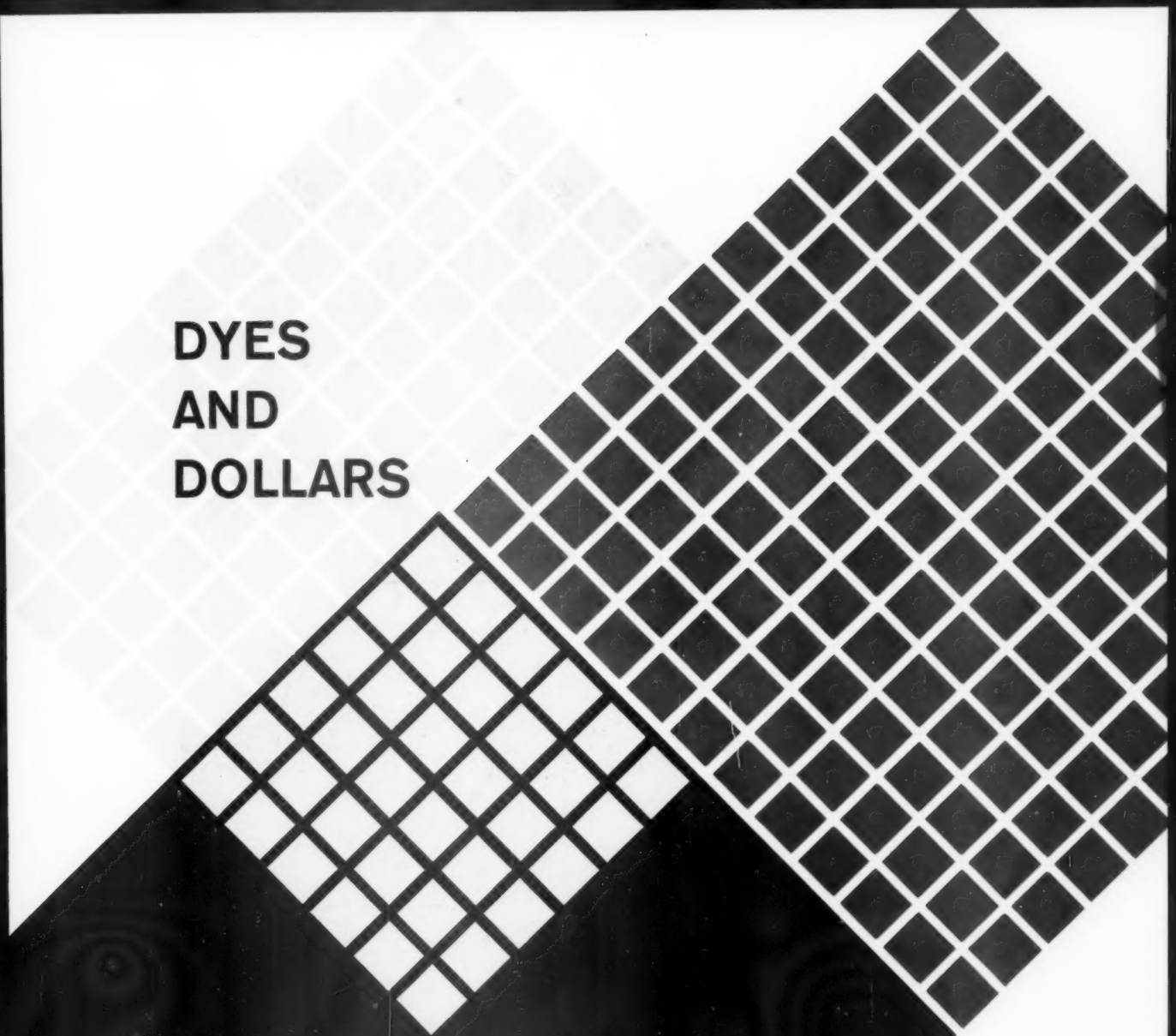
**Fuller**
....pioneers in harnessing AIR

# DYES AND DOLLARS



**The Color of Money.** Paper mills, like other businesses, are always on the lookout for ways to save money without sacrificing quality standards. In the past year CIBA Company Inc. has introduced "Paper-Proved" Dyes aimed at doing just this. Among these are: Direct Yellow P-CD, Direct Yellow P-RCD, Chlorantine Fast Blue P-8GLL.

Your inquiries are invited on CIBA "Paper-Proved" technical information, samples and color matching.

CIBA

**Direct Yellow P-CD**
**Direct Yellow P-RCD**

**Chlorantine® Fast Blue P-8GLL**

All three are versatile dyes, recommended for bond, ledgers, mimeo, offset printings and specialty convertings. In addition, these dyes have excellent light-fastness and good fastness to acids, alkalis and water. Bleaching with hypochlorite permits the use of the broke in other light shades. Pleasing shades of blues, yellows and greens can be obtained for facial, toilet and napkin stocks.

**CIBA Company Inc., Paper Chemicals Department**
**Fair Lawn, New Jersey**

# By every standard... WEST END MEASURES UP AS THE QUALIFIED SUPPLIER OF SALT CAKE

ACCURATE PROCESSING OF ORDERS
UNIFORMLY HIGH QUALITY
ABUNDANT STORAGE
FLEXIBLE AND EFFICIENT LOADING AND SHIPPING
EXTENSIVE PRODUCTION CAPACITY
VAST NATURAL SOURCE OF RAW MATERIAL
ALL COMMITMENTS SCRUPULOUSLY MET
FRIENDLY, HELPFUL ATTENTION TO INDIVIDUAL NEEDS
PROMPT, AUTHORITATIVE ANSWER TO EVERY INQUIRY
However you view your needs, you will find in West End a unique coordination of specialized services, extensive production facilities and product excellence essential to the prompt, efficient handling of individual requirements.

*Uniformly high quality*

**SALT CAKE**

TYPICAL ANALYSIS

| | Typical % | Guaranteed % |
|---|---|---|
| $Na_2SO_4$ | 99.57 -99.87 | 99.5 Min. |
| NaCl | .06 -.14 | .2 Max. |
| $B_2O_3$ | .03 -.06 | .1 Max. |
| $CO_2$ | .02 -.04 | .05 Max. |
| $Na_2O$ | .05 -.09 | .1 Max. |
| $H_2O$ | .01 -.10 | .2 Max. |
| Insoluble | .001-.01 | .05 Max. |

Density: Struck Approx. 75 lbs./cu. ft.
Tapped Approx. 88 lbs./cu. ft.

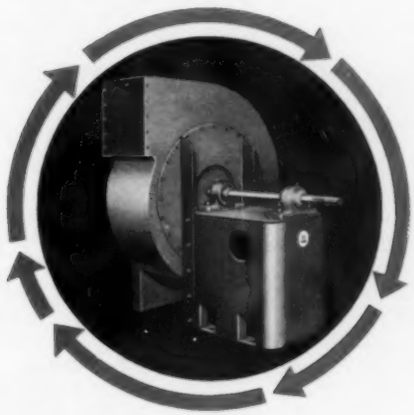
Solution . . . Clear Color . . . White

Production techniques and controls developed at West End maintain the traditional quality of our product, even as we produce it in ever-increasing quantities. We submit West End as a chemical of highest purity and offer the above analysis for your consideration.

Stauffer CHEMICALS SINCE 1885 — 75 YEARS OF SERVICE TO INDUSTRY AND AGRICULTURE

**WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY**

1956 WEBSTER STREET, OAKLAND 12, CALIF. • PLANT: WESTEND, CALIF.



*Moving air, gases, materials . . . a job for American-Standard industrial fans*

*versatility is the word for American-Standard* industrial fans. You can get wheels specifically designed for moving air, gases, or materials; pressures up to 18" wg; volumes to 125,000 cfm. Plus a wide choice of housings, arrangements, construction features, and optional accessories to fit individual needs. Which combination for you? Call our nearest office. American-Standard Industrial Division, Detroit 32, Michigan. In Canada: American-Standard Products (Canada) Limited, Toronto, Ontario.*

*American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation

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INDUSTRIAL DIVISION

AMERICAN BLOWER PRODUCTS • ROSS PRODUCTS • KEWANEE PRODUCTS

# *Another* PRIMARY AND SECONDARY HEADBOX

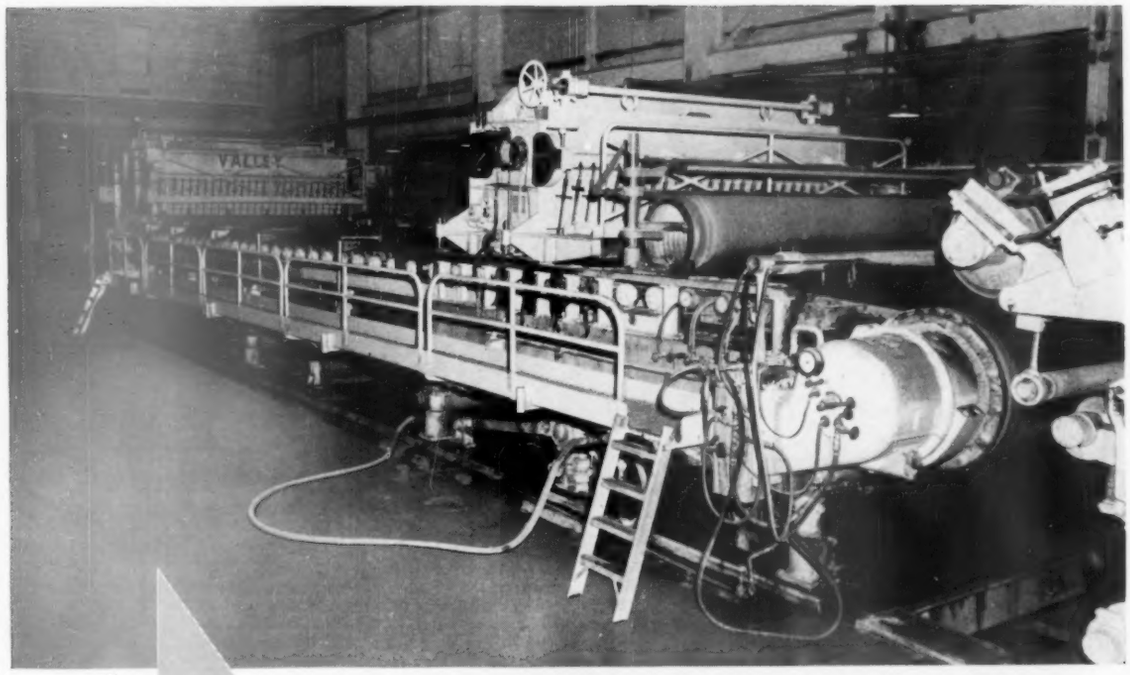
by . . . VALLEY . . . *installed on the new 164" paper machine at . . .*

# CASCADE KRAFT CORP.

## Wallula, Washington

"We are more than pleased with the boxes which you furnished us."

**Hugo Trygg,**
Mill Manager




*Consult . . .*

**VALLEY IRON WORKS CORP.**
*subsidiary of Allis-Chalmers Manufacturing Co.*
APPLETON, WISCONSIN
**Canadian Representative: Pulp and Paper Mill Accessories Ltd., P. O. Box 850, Station "O", Montreal 9, Quebec**

# EXTRA RICH IN CORROSION RESISTANCE

**ESCO CAST 45-S STAINLESS FITTINGS LAST FAR LONGER ON DIGESTER RELIEF LINES**

Sulphur dioxide gas, acid fumes and steam at 280°F. and at 80 pounds pressure add up to a severe corrosion problem on digester relief lines in sulphite pulp mills.

*ESCO* Alloy 45-S Cast Fittings out-perform wrought type 316 fittings under corrosive conditions because they contain a "richer" balance of chromium and molybdenum, the elements that perform major services in resisting corrosion.

*ESCO* Cast Fittings and Flanges are available from local warehouse stocks in a complete range of types, sizes and alloys to help solve your corrosion problems.

**Call your nearby ESCO representative today for details, or write direct. Ask for ESCO Fittings Catalog 156, and ESCO Alloy Notebook No. 7, "What Is Corrosion?".**

ALLOY CASTING INSTITUTE (ACI) MEMBER

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**ELECTRIC STEEL FOUNDRY COMPANY**

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.

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IN CANADA ESCO LIMITED

These Bristol Instruments at Lithium Corporation of America, Bessemer City, N. C., are part of an extensive installation that keeps tabs on such variables as temperature, pressure, absolute pressure, flow, liquid level, and pH.

# Almost every industry can benefit from BRISTOL INSTRUMENTATION

**Here's an outstanding example of the way Bristol is helping thousands of industrial processes today:**

In Lithium Corporation of America's plant for extraction of vital lithium compounds, located in Bessemer City, North Carolina, near this nation's largest ore deposits, precision Bristol instruments monitor and control practically every step of the extraction process.

From the early planning stages, Bristol instrument engineers worked closely with Lithium Corporation engineers in designing the instrument system for this modern plant. Temperature, pressure, absolute pressure or vacuum, flow, liquid level, and pH had to be recorded or controlled at a multitude of points in the complex extraction process. The Bristol instruments used included electronic Dynamaster* potentiometers and pyrometers, pneumatic and time program controllers. In operation for nearly four years now, the Bristol instruments have been doing a precise job of recording and controlling despite vibration and a corrosive, dusty environment.

This is just one example of the way Bristol can work with you in selecting the *right* instruments for your process. Bristol makes the most complete line on the market of full-size and miniature instruments for measurement, recording, automatic control and telemetering of almost every industrial variable. And Bristol Application Engineers are always ready to advise and assist you in applying them to your process. Write: The Bristol Company, 142 Bristol Road, Waterbury 20, Conn.

*T.M. Reg. U. S. Pat. Off.* B-48

**BRISTOL** TRAIL-BLAZERS IN PROCESS AUTOMATION

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

# Things are growing at Buckeye

**PLANT CAPACITY DOUBLED IN 1959**

Buckeye is growing bigger to serve you even better.

A recently completed addition doubles plant capacity, and both units have the most advanced equipment. Improved processes include double-screening for outstanding cleanliness, and 8-stage bleaching for top brightness without strength loss.

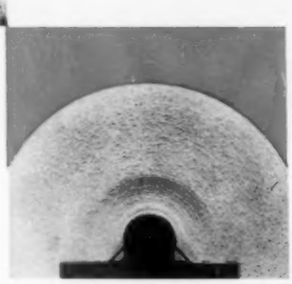
There's growth in Buckeye's timber supply, too. Company-owned holdings have been increased to over 800 thousand acres. Seedlings selected for pulping characteristics and fast growth are being planted at the rate of 10 million a year. If you're looking for a dependable source of supply to match your growth, let's talk it over. Buckeye specializes in market pulp.

BUCKEYE CELLULOSE CORPORATION
Memphis 8, Tenn.

*Wood pulp plant at Foley, Fla.—Cotton linters plant at Memphis*

# BUCKEYE PULP

*Bleached and Semi-Bleached Kraft from Southern Pine*



To protect a world wide reputation for producing the ultimate in custom-engineered precision doctors, Lodding spares no effort. Critical tests and inspections accompany every step of fabrication. Finally, each doctor is test-mounted in the exact position it is to occupy on the roll. It is then checked for tolerances and clearances before installation.

Telescopic inspection, assuring edge linearity to ±0.002 of an inch, is but one of many tests for quality performed on each Lodding doctor before it is permitted to leave the plant.

Exacting quality control and research combined with unique specialization in doctor engineering are among the reasons why Lodding doctors out-perform others in thousands of installations here and abroad.

Whatever your doctor requirements, from Fourdrinier to reel, you'll get exceptional value and performance from Lodding, recognized for leadership in precision doctoring.

Call on Lodding or your nearest sales representative for complete technical information at any time.

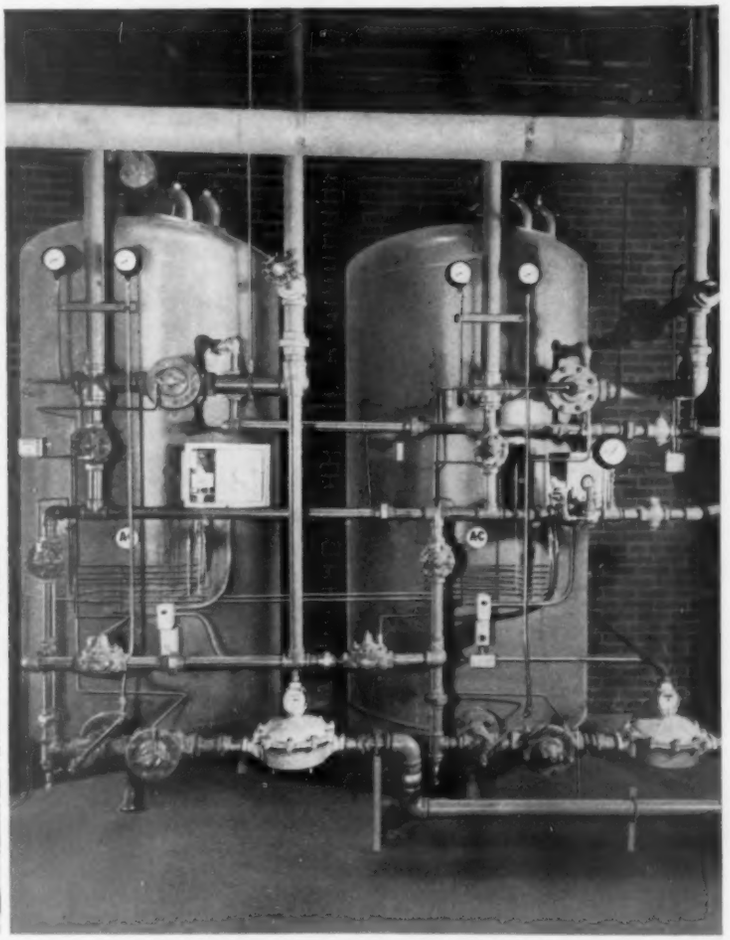
*Telescopic inspection of blade holder*

*Testing complete doctoring equipment in operating position.*

**LODDING**
*Engineering Corporation*
AUBURN, MASSACHUSETTS

# ALLIS-CHALMERS

A-1247



**Left,** zeolite resin magnified 40 times. **Right,** completely automatic, multiple-valve, dual sodium softeners in Southwest mercantile building.

## With Allis-Chalmers Sodium Zeolite water softener in your plant,

# hard water vandals turn into "softies"

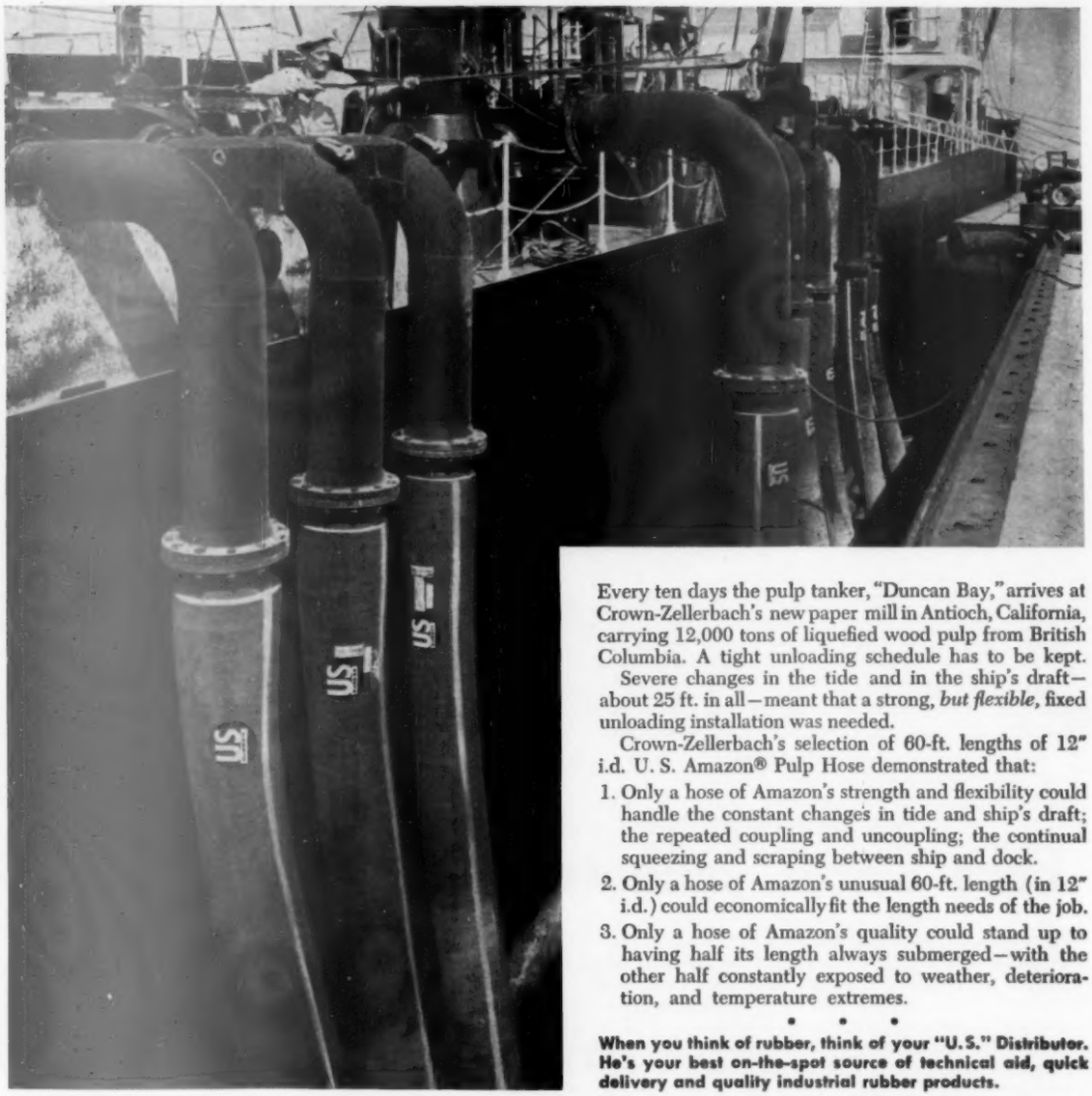
Fair exchange to an Allis-Chalmers zeolite water softener means a simple switch to sodium ions from the usual hardness present in most water supplies. Calcium and magnesium are the vandals that cause scale in pipes and boilers, clog systems and mean heavy use of cleaning compounds. Zeolite is their natural enemy. But once A-C conditioned, the "softened" water finds ready use in hospitals, institutions, hotels . . . in processing foods and beverages . . . treating municipal water . . . in chemical plants. It ends scaling of manufacturing plant boilers, pipes and heat exchange tubes. A-C standard designs carry a full selection of options to meet any installation problem, local code or custom use. Look to A-C for all of your water conditioning equipment, chemicals and service.

*For complete details, call your nearby A-C office or write* ***Allis-Chalmers,*** *Power Equipment Division, Milwaukee 1, Wis.*

**One source for all water conditioning facts,** chemicals, equipment, service! Write for hot zeolite water softener bulletin 28B7304 . . . sodium zeolite water softener bulletin 28B7107A . . . and deaerator bulletin 28B8853.

AMAZON HOSE

# Controlling time and tide —with 60-foot lengths of hose




Every ten days the pulp tanker, "Duncan Bay," arrives at Crown-Zellerbach's new paper mill in Antioch, California, carrying 12,000 tons of liquefied wood pulp from British Columbia. A tight unloading schedule has to be kept.

Severe changes in the tide and in the ship's draft—about 25 ft. in all—meant that a strong, *but flexible*, fixed unloading installation was needed.

Crown-Zellerbach's selection of 60-ft. lengths of 12" i.d. U. S. Amazon® Pulp Hose demonstrated that:

1. Only a hose of Amazon's strength and flexibility could handle the constant changes in tide and ship's draft; the repeated coupling and uncoupling; the continual squeezing and scraping between ship and dock.
2. Only a hose of Amazon's unusual 60-ft. length (in 12" i.d.) could economically fit the length needs of the job.
3. Only a hose of Amazon's quality could stand up to having half its length always submerged—with the other half constantly exposed to weather, deterioration, and temperature extremes.

• • •

**When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.**

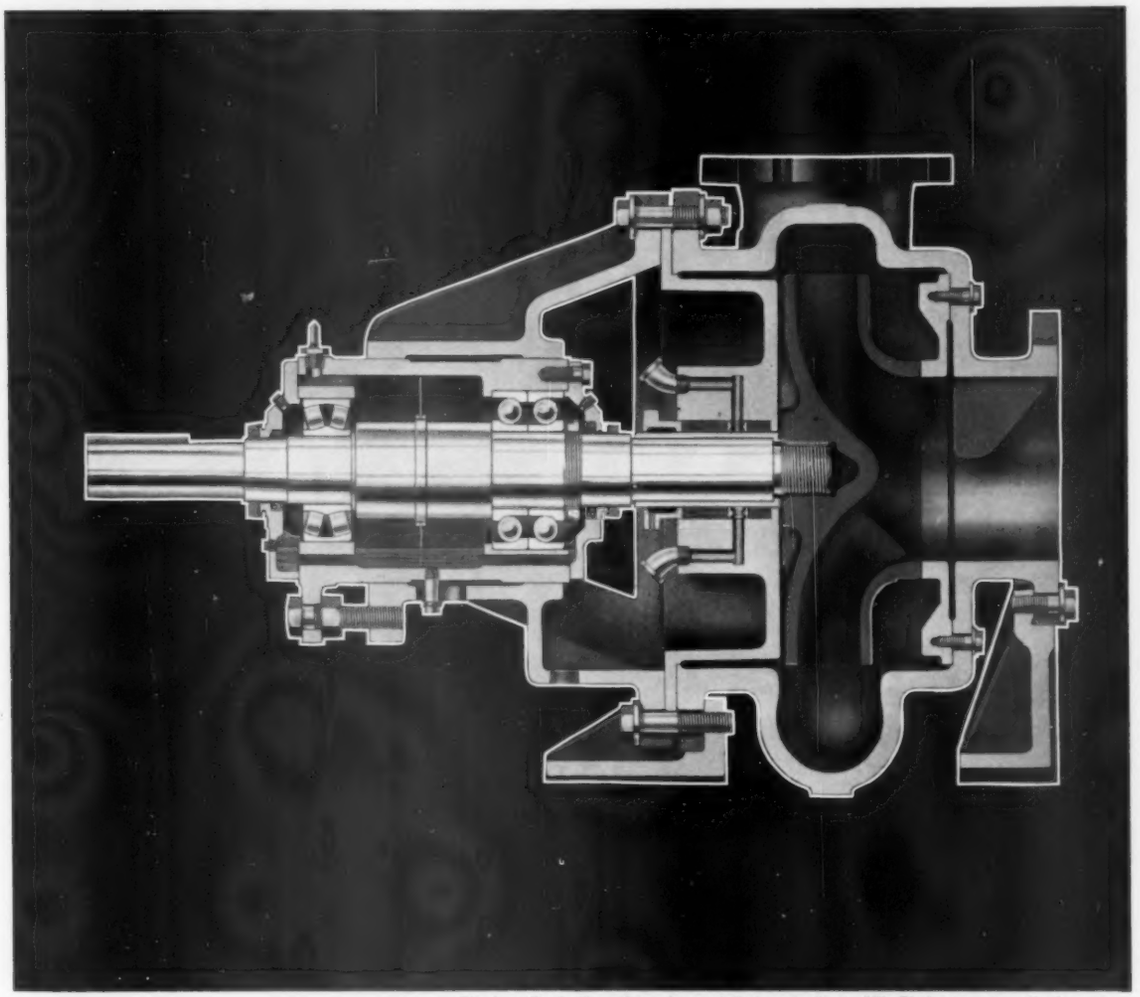
Mechanical Goods Division

**United States Rubber**

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

# ALLIS-CHALMERS



The impeller is the only major part that wears in an Allis-Chalmers paper stock pump.

# Wear?...Where?

## Only one major moving part can wear in Allis-Chalmers paper stock pumps

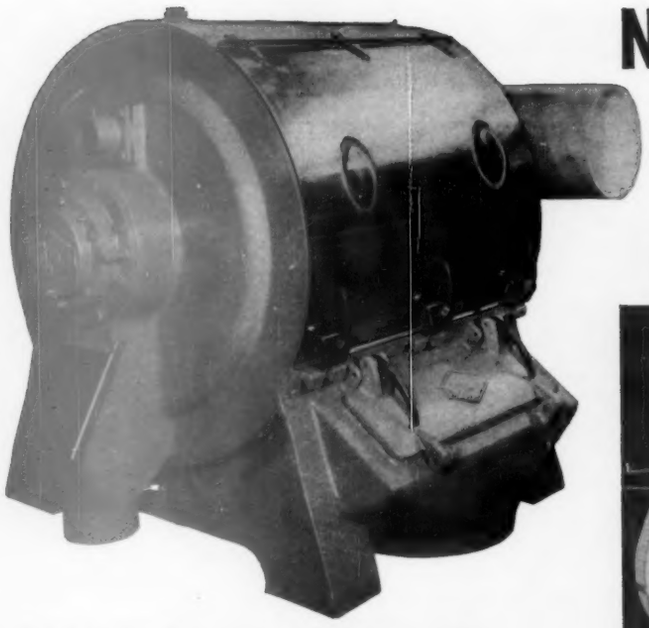
**Wear hardly has a chance** against these heavy-duty pumps. Known in the mills for maximum endurance, Allis-Chalmers PW pumps minimize the risk of crippling shutdowns.

Here's the advantage of simplified design. Parts replacement is never a problem. Disassembly can be made in minutes by swinging out the rotating element, without disturbing suction or discharge piping. Maintenance is readily achieved.

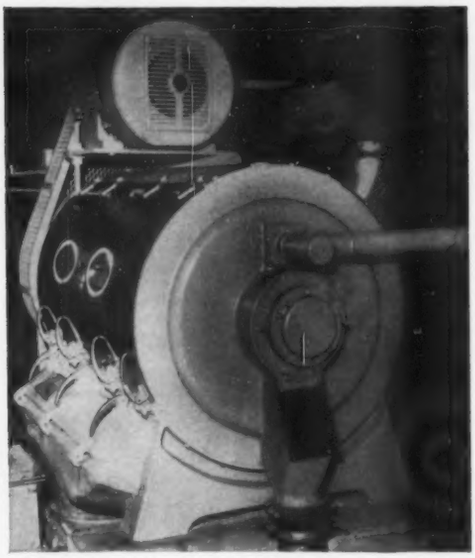
In addition, these pumps offer substantial savings through parts standardization. Three bearing brackets fit 11 pump sizes, and only four other parts vary in size from one pump to another.

• • •

*For further information on a complete line of durable pumps for the paper industry, call your local A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.* A-1214



# NEW ADVANCES
## IN LOW COST QUALITY PULP SCREENING

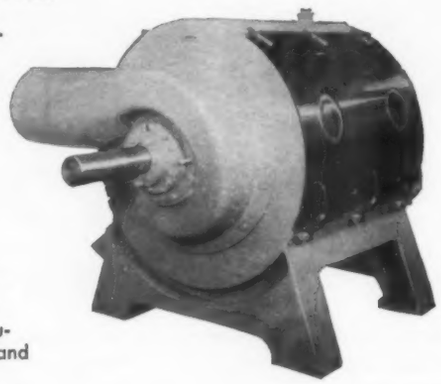


## IMPCO CENTRIFUGAL SCREENS FOR:

**Washed Stock Screening**
**Hot Stock Screening**
**Sealed Black Liquor Knotting**
**Fibre Length Classification**
**Paper Stock Cleaning**

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- — a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- — a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- — a special stator which provides uniform internal distribution of pulp;
- — a patented high-efficiency rotor which increases capacity without additional horsepower;*
- — a bottom accepted stock outlet permitting all sub-floor piping;
- — a full length quick-opening door for routine accepted stock sampling;
- — an accessible rejects outlet for tailings inspection or sampling.



These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.

**IMPROVED MACHINERY INC.**
**NASHUA, NEW HAMPSHIRE**

IMPCO®

**In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec**

ALLIS-CHALMERS

A-1235

**ACID AREA APPLICATION.** Safety equipment and clothing are a "must" for personnel in the acid atmosphere of Dow's chlorine plant at Freeport, Texas. This **Super-Seal** motor came prepared, too — with **Poxeal** insulation guarding the stator.

# Nothing...but nothing...stops Super-Seal motors

**In a tough acid pump installation,** Dow Chemical's Texas Division experienced no end of motor troubles. It seemed nothing could stand up in that humid, corrosive atmosphere. Reports Dow: "Even with totally enclosed motors, winding failures were frequent." And, they might have added, expensive.

**Then came *Super-Seal* motors**— with amazing *Poxeal* insulation. A durable case of epoxy-resin encloses the winding end turns and slot portions of the stator . . . the most complete protection ever developed. Result? The *Super-Seal* motor, *after two years* of continuous operation in the acid area, is as good as ever. So good, in fact, that Dow has ordered 150 *Super-Seal* motors for a new chemical plant at Freeport, Texas.

**Isn't it time** to revaluate *your* motor standards? There's a good chance that *Super-Seal* motors can solve your motor problems, too. Contact your A-C representative or distributor, or write **Allis-Chalmers,** General Products Division, Milwaukee 1, Wisconsin.

*Super-Seal and Poxeal are Allis-Chalmers trademarks.*

# Bauerite

## PAYS OFF

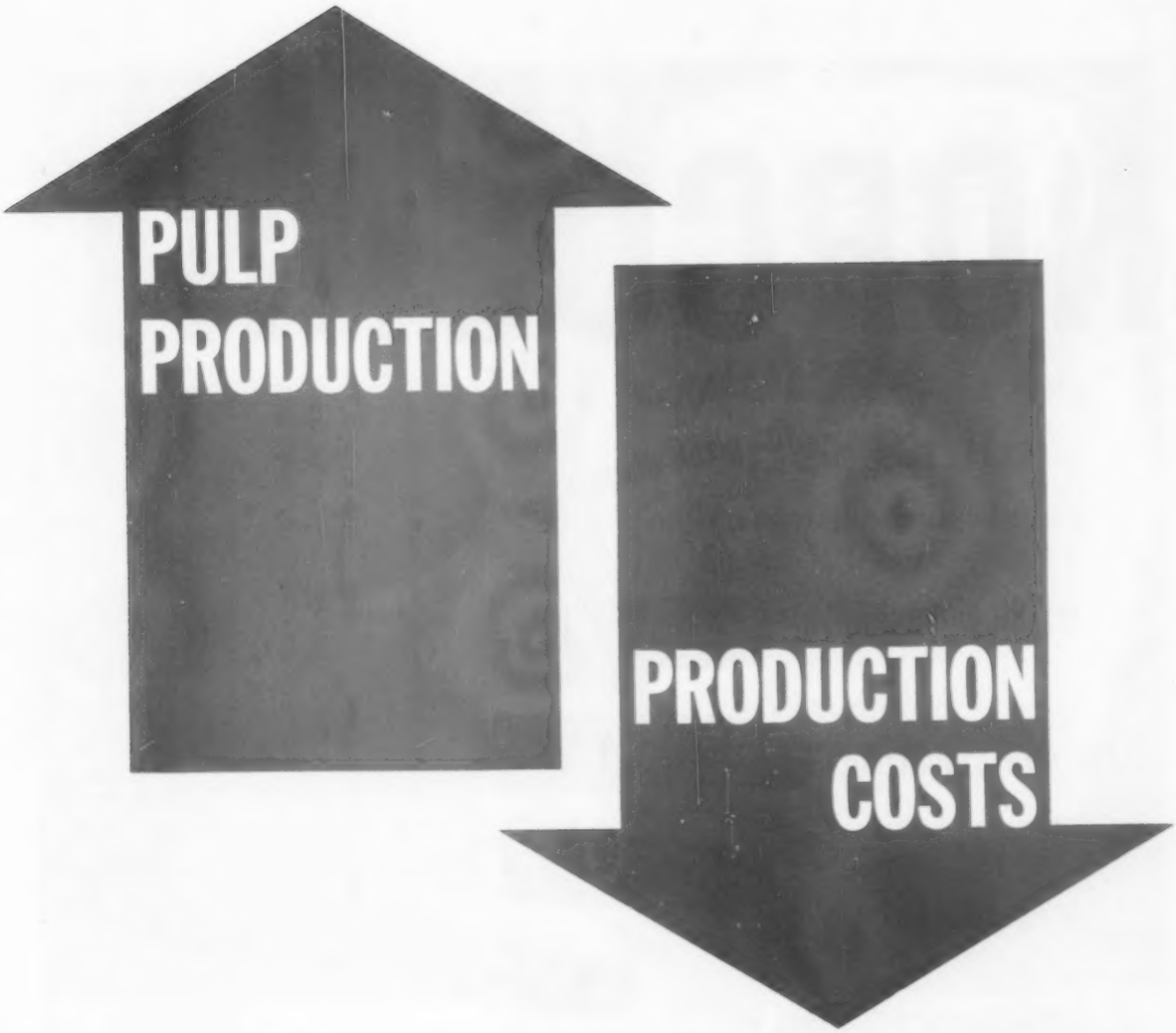
Four mills* of the many using the Bauerite® process to make groundwood type pulp from chips are **doubling** their production. Wood economics often force mill owners to look for a substitute for their dwindling supply of softwoods.

Production advantages, new economies and greater profits are available with the Bauerite process. For instance, many have gained a constancy of quality superior to that possible with conventional groundwood. Slabs, edgings, certain sawdusts and chips of irregular size—in various blends and often from species of wood previously not suitable—are being used from local sources. These are some of the reasons why mills find this process profitable. Write, or ask your Bauer representative for complete information.

**Gould Paper Co., Lyons Falls, N. Y.; Daishowa Paper Manufacturing Co.; Jujo Paper Manufacturing Co. Ltd.; Tokohu Pulp Co. Ltd., Japan.*

The Bauer Bros. Co.
1706 Sheridan Ave., Springfield, Ohio

This Bauer double revolving disc refiner is bound for Gould Paper Co., Lyons Falls, N. Y., where production of Bauerite groundwood pulp from chips will soon be doubled.




*with nominal capital investment*

## *key:* AMMONIUM BISULFITE PULPING

More mills than ever are looking at Ammonium Bisulfite Pulping as an economical way to increase pulp output. Mills that have already converted to ABP are now realizing the substantial cost savings this process gives them.

With little increase in capital investment, ABP shortens cooking time, thus reducing the cost of steam per ton of pulp while it increases digester output 20% or more. Yields from the wood itself go up too, because there are fewer rejects during screening. A wider choice of pulpwoods—soft or hard — is a bonus advantage.

The ammonia process eliminates entirely the maintenance problems caused by "liming up." Easier pollution control further reduces costs.

Another fact you should know: Allied Chemical pioneered ABP, and Allied Chemical's technical specialists can help you with detailed information as you weigh its merits for your mill. Call them in for an exploratory talk.

For specifications and local offices, see our insert in Chemical Materials Catalog, pages 435-442 and in Chemical Week Buyers Guide, pages 35-42, or write our New York office.

BASIC TO AMERICA'S PROGRESS

Allied Chemical

NITROGEN DIVISION
Dept. AA13-25-4, 40 Rector Street, New York 6, N. Y.

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A SKILLED HAND IN CHEMISTRY . . . AT WORK FOR YOU

# NOPCOSANT®

...for pitch dispersing

...for slime control

...for size stabilizing

...for coating fluidizing

...for uniform dyeing

You will find it worth your while to get all the facts about Nopcosant—Nopco's newly improved dispersant and solubilizer. Ask your Nopco representative or write for complete information. Remember, too, back of every chemical made by Nopco for the paper industry stands Nopco Technical Service—an experienced staff ready to assist with laboratory data and recommendations based upon your specific requirements.

**NOPCO CHEMICAL COMPANY**
**60 Park Place • Newark, N.J.**

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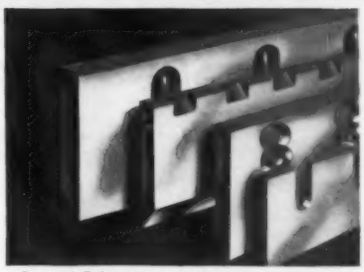

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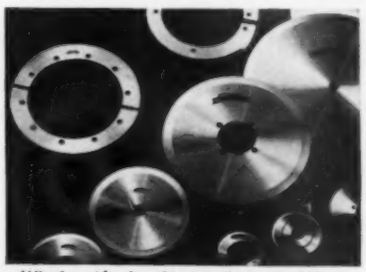

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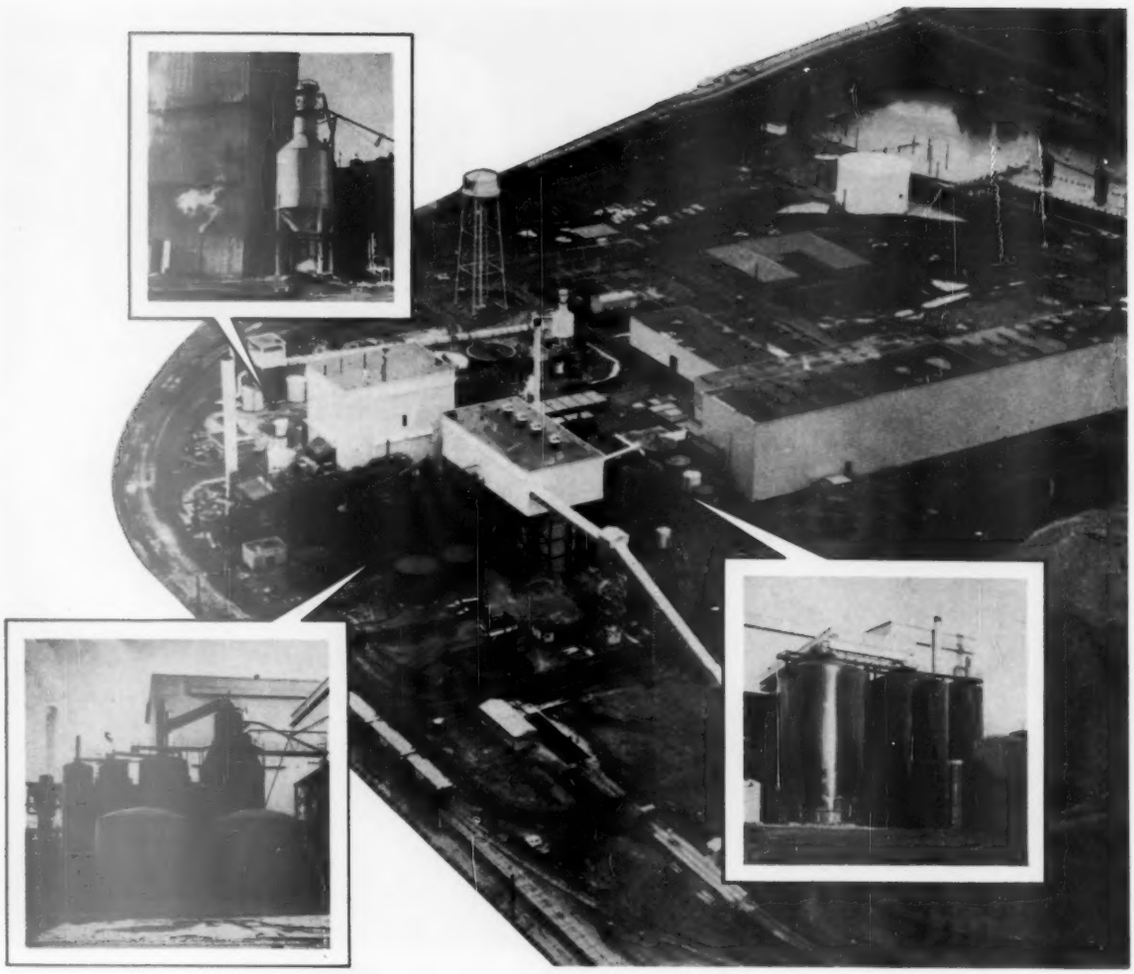

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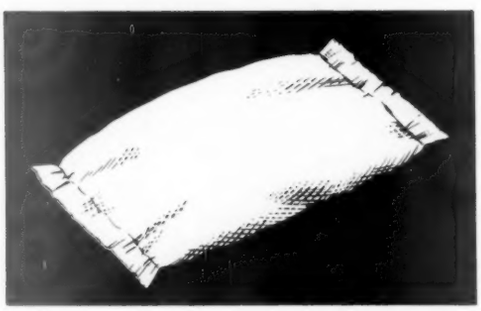

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# Kimberly-Clark and Darblay Become Partners In Plans for Big Tissue Expansion in France

**Special to PULP & PAPER**

Paris . . . Two of the largest paper companies of the United States and France have joined forces. Subject to approval of the French Exchange Office, the American firm, Kimberly-Clark Corp., of Neenah, Wis., U.S.A., has acquired a major ownership of Société Sopalin stock. The balance of Sopalin's shares is the property of Société Anonyme des Papeteries Darblay, one of the biggest French paper manufacturing firms, whose activities may be traced back to 1867.

Negotiations between the companies were in progress for some months. The agreement was announced by John R. Kimberly, chairman of Kimberly-Clark, and Rodolphe Darblay, chairman of Papeteries Darblay, whose headquarters are at 27 Rue des Pyramides, Paris.

For many years, Société Sopalin has been selling a wide range of wadding products and other paper products made at its Corbeil Essonnes mill, south of Paris. This mill has eight paper machines which are of 200 and 360 centimeters widths. These machines are owned by the Darblay interests and are not part of the Sopalin enterprise, which will be entirely a converting operation at the same location. Basic raw materials were supplied by Papeteries Darblay, which also was exclusive sales agent and the parent company.

Upon approval by French Exchange authorities, converting equipment will be added to this mill. During a first phase, the internationally known Kimberly-Clark trademarked products, such as Kleenex tissues and Kotex sanitary products, which were imported into France, will be manufactured here.

### Acquired Cigaret Mills Also

Recently Kimberly-Clark also acquired interests in two French cigaret and fine paper mills in Brittany. It acquired 15% of Papeteries Bollore and 50% of Papeteries de Mauduit. These mills have worldwide markets. One of Kimberly-Clark's principal acquisitions in recent years in the U.S. were the Schweitzer cigaret and fine paper mills.

The collaboration of Darblay and Kimberly-Clark will enable Sopalin to increase considerably its sales of wadding and paper products.

Papeteries Darblay has controlled operations of three important mills in France. One is the Corbeil Essonnes mill, which has been in operation since 1799. The other two are the Grand Couronne mill, with three machines, two being 5.25 meters in width and the other one, 3.60 meters, and the Bellegarde mill, which has a 3.60 meters wide machine. Their production is rated (for all three mills) at 3,800 tons per week.

Richard B. Sawtell, manager, industrial marketing, planning and research for Kimberly-Clark, in Neenah, Wis., U.S.A., has been appointed general manager of the French company, Sopalin. He has been with Kimberly-Clark since 1933. He was planning to move to France in February or March. Other executives and specialists from Kimberly-Clark will follow.

### Both Companies Have Long History

The Essones mill, in which Darblay and Kimberly-Clark will be joint developers of expansion and new processes for France, is famous in papermaking history, Stanislas Darblay recently told PULP & PAPER in an interview. Nicolas Louis-Robert, the inventor of the modern Fourdrinier paper-making process, was working in the Essones mill 160 years ago when he took out patents for the formation or the wet end of what is now called a Fourdrinier, said M. Darblay. The inventor was not able to raise the money in France to build the first model and it is in England, where he went afterwards. He sold his patents to the Fourdrinier family of stationers, London, who built the first operating Fourdrinier.

**RICHARD B. SAWTELL, general manager of reorganized Société Sopalin, which will make Kimberly-Clark products in France.**

In the past three years, Kimberly-Clark has installed two new tissue machines in the new Larkfield mill near London. It is two-thirds owner of this enterprise, shared with Albert E. Reed & Co., which owns one-third. Kimberly-Clark or subsidiaries also operate tissue, newsprint and book paper mills from Coast to Coast in the U.S.A., also in Canada and Mexico, and it has tissue converting facilities in Germany, South Africa and Australia. Many of these operations have been expanding.

Kimberly-Clark had its beginning in a partnership formed in Neenah in 1872 for the purpose of producing rag newsprint. Since that time it has played an important part in the development of paper and cellulose products.

It was among the first to experiment with and utilize wood fibers as a raw material for the production of paper and was responsible for the creation of creped cellulose, the base material for today's large family of disposable sanitary paper products.

Kimberly and Darblay voiced optimism with respect to the future potential in France of Sopalin in the field of consumer products made from cellulose wadding and stationery paper products.

# Food Additives is Grave

## which may make it even more formidable. March 6 deadline may bring a shock to some. A scramble for health o.k.'s

● Called by some a "crisis" for the paper and paperboard industry, the Food Additives Amendment of 1958 will nevertheless become reality March 6. Its provisions will certainly affect changes in operation both for manufacturers and converters.

Current question: "How and to what extent?"

Owner of an independent research laboratory for industry foresees widespread testing on a 24-hr. basis by paper and paperboard manufacturers. If the letter of the law is observed he predicts, all mills will be forced to institute continuous ingestion tests with laboratory animals in order to maintain purity of product.

Vast expenditures by chemical suppliers to the industry are feared by one large producer. It will cost tens of thousands of dollars per color, says the company, to assure the purity of dyes alone. This takes no account of other chemicals used in paper and board.

Consensus among producers of packaging materials is that the food industry as a whole hasn't assumed its share of the research responsibility. The food industry has "let George do it"—meaning the paper industry and chemicals producers.

Course of events that has led to this somewhat clouded situation is relatively simple. Solving the consequent problems remains the enigma. Even more so, as this is an election year, with little chance, therefore, of easing restrictions.

***A great many people who have not heretofore considered themselves at all subject to the Federal Food, Drug & Cosmetic Act are being asked by their customers to give written guarantees that paper, foil, boxes, plastics, bottles, jars, fine chemicals and many other substances not ordinarily considered to be foods meet the requirements of the new food additives law.***

***—William W. Goodrich***
***Asst. Gen. Counsel for Food and Drugs***
***U. S. Dept. of Health, Education & Welfare***

Under the Food, Drug & Cosmetic Act (1938), introduction or receipt in interstate commerce of any adulterated or misbranded food is prohibited. Definition of "food" according to provisions of the law. "Articles used for food or drink for man or other animals and articles used for components of any such article."

Relatively clear and to the point, this law has been in effect for more than 20 years with little more than the usual objections faced by any government regulation.

Migration from the package came under fire with passage of the Food Additives Amendment of 1958. In brief, a food additive is defined as any substance, the intended use of which results or may reasonably be expected to result in its becoming a component or otherwise affecting the characteristics of any food.

This specifically includes any substance intended for use in packing, packaging, transporting or "holding" food.

Crux of the problem is in the possible migration of any additive into the foodstuff packaged. A leading industry association has told its members: "In short, this technical language indicates that food packaging papers will not come under the law as food additives if such papers or elements thereof can be shown by scientific proof as safe for use in packaging foods, or if it can be shown that nothing in the paper may be expected to become a component of or affect the characterisitics of the food."

Representative of numerous paper industry associations which are cooperating in interpreting the law to members and in supervising research, one association spokesman had this to say: "We are doing everything we can to comply with and/or to clarify the ruling. We are confident that a show of good faith on the part of the industry will result in deadline extensions."

The debate, nevertheless, still continues.

## Off-the-Cuff Comments Gathered in PULP & PAPER's Survey

"Our company lawyer says the packager, the end user, is the one who will be liable."

"If there is any doubt of purity, the paper mill is the one responsible."

"Faced with year-long ingestion tests with rats (or other laboratory animals) at cost of $100,000 each, one big supplier of colors to the paper industry is threatening to pull out of the business."

(Another informant said the tests were far less expensive but some companies would have to make 200 or 300 tests.)

"Why should we go to this expense of proving our chemicals or colors are okay, if some competitor can ride our coat-tails with the same product, and come in free?"

"Despite what the newspapers said, the cranberry growers had a whole year's warning, but just went ahead on the basis 'it can't happen to me.' The paper industry, in some areas has been taking the same attitude."

"There is absolutely no chance for repeal or softening of the law this year. How could there be on a public health matter in an election year?"

"To be on the safe side, many mills today are going back to whites or colors they know are okay, and they won't take any chances."

"This is going to mean some shifting in the chemical and color companies supplying mills. Some may drop out, others come into the field."

# Problem of Election Year

## Extremes of thought lie not only between government and industry but between chemical and legal minds, as well

Apparent is the fact that the industry's biggest problem currently is obtaining rulings from FDA. Only one thing is clear:

*The burden of proof rests upon the industry to show by scientific tests (wherever there is a question of whether packaging materials are a food additive) that the components are safe for the intended use.*

Manufacturers are being called upon to guarantee the acceptability of their products. Company lawyers are beating what has become a well-worn (and rutted) path to the doors of Washington agencies. And in the opinion of an independent researcher, this is a mistake.

"These lawyers are not chemists," he says, "and they could realize as much satisfaction (perhaps more) by mail." It is apparent that agency officials in Washington are unable to give any more satisfaction in person than they could by letter.

A government spokesman told PULP & PAPER that FDA is "swamped" with requests for extensions and for clarification on various points of the law. "We are at least three months behind in answering our mail," he said, "let alone conducting conferences with industry officials."

Many questions being asked today are not being answered simply because the answers are not available. It is widely believed that without legal precedent, there will have to be test cases of the law.

## Avoiding the Cranberry Fiasco

### Some 96 chemicals were cleared by year's end

Because of the massive scope of the problem, individual manufacturers of paper and board have found it physically impossible to do their own research. Such work is being done through the cooperative efforts of such groups as APPA, National Paperboard Assn., the Packaging Institute, the American Petroleum Institute and others. General opinion is that the government has been favorably impressed with such effort. Under these circumstances, perhaps, delay rulings and deadline extensions may be more amicably granted.

Constantly in mind is the fate that befell cranberries just before Thanksgiving 1959. Every effort is being made toward reasonable cooperation with government to avoid a similar situation.

In respect to the amendment, says one association, the packaging industry should be considered as occupying a position quite different from the food industry. This is because packaging materials were never considered as "food' prior to the amendment. As a consequence, the vast majority of the packaging industry on September 6, 1958, was only cursorily familiar with the Federal Food, Drug & Cosmetic Act and its requirements and were of course unprepared for the basic and fundamental changes brought about by the amendment. The Packaging Institute had this to say in a letter to the Hon. Arthur S. Flemming, Secretary of Health, Education & Welfare, in requesting a deadline extension:

"Education in this respect has taken much time, but members of the industry have been diligent in seeking information and applying it to the facts of the packaging industry. . . . Since this is an entirely new field, the assembling of the required information has been difficult and extremely time-consuming. . . . Among the problems confronting the industry is the dearth of personnel necessary to develop the lacking information. . . . Even after the educational, information-assembling and employment phases have been accomplished, the development of scientific procedures and the completion of many tests require additional time.

" . . . The Packaging Institute believes the foregoing constitute reasons that should persuade the Secretary of Health, Education & Welfare to extend to March 5, 1961, the period within which food additives used in food packaging may be qualified under the Food Additives Amendment as provided in said act."

#### Paper Machine Sterilizes

Of the 144 or so chemicals in common use in paper and paperboard, 96 had been cleared at year's end. Okay for the remainder was "on the way." There seems to be no crisis, and many feel that the industry will emerge with a "clean bill of health."

At a recent NPA meeting it was pointed out that the paper machine is an excellent sterilizing medium. This poses the problem of reused fibers. The fibers themselves pass muster, but the question remains as to what amount of mill contaminants will alter the picture.

## Far-Ranging Chemical Studies Under Way

### No clear cut solution to grave questions in sight

Chemicals used in paper and paperboard are said to total more than 350. Of these, however, only about 144 are in common use, and it is toward these that major research is being undertaken—mainly through association efforts.

One industry group has announced that studies should be limited to (1) common chemicals—those used by more than three mills and (2) those chemicals used in the production of basic paper and board. Following these criteria, the 144 "common chemicals" were arrived at.

Principal rosin size suppliers are cooperatively working on a large-scale detailed program that cannot be completed before the March 6 deadline. However, enough data will be on hand to justify requests for additional time.

Suppliers of wax, through the American Petroleum Institute, have an extensive program underway, and the starch companies are progressing in having their products cleared.

## . . . FOOD ADDITIVES

Because of the expense of laboratory tests that many chemical manufacturers will have to undertake to gain approval for their products, it has been rumored that some firms may withdraw completely from the paper and board field. On the other hand, some new brands—those with FDA approval—are going to come on the market.

And an additional problem faced by chemical manufacturers is perhaps the most important of all: "If ABC Co. undertakes expensive research to clear its products, can XWZ Corp.—which makes the exact formula—be granted government approval on the strength of the ABC findings?" This is a poser. And no ruling has been forthcoming from FDA.

Perhaps no clear-cut solution to the over-all problem is yet in sight. This is understood by government as well as by industry. At the 14th Annual TAPPI Plastics & Paper Conference held in Chicago in September, Arthur A. Checchi, asst. to the deputy commissioner, FDA, had this to say:

"There may be other approaches to this problem. If such occur to you, we shall be very happy to discuss them with you. We are willing to adopt any procedures that will simplify the problems facing industry, provided of course that at the same time they permit both government and industry to fully discharge their responsibilities under the Food Additives Amendment."

## 96 Safe Materials for Manufacture of Pulp, Paper and Paperboard

*The following materials have been generally recognized as safe by the Food Additives Liaison Committee, American Paper & Pulp Assn. and National Paperboard Assn.:*

Acetic Acid
Alginates (sodium)
Alpha Protein
Aluminum Hydroxide (Alumina)
Aluminum Oleates, Palmitates
Aluminum Stearate
Aluminum Sulfate
Ammonium Chloride
Ammonium Hydroxide
Ammonium Sulfate
Butylated Hydroxy Anisole (BHA)—0.02%
Butylated Hydroxy Toluene (BHT)—0.02%
Calcium Carbonate
Calcium Chloride
Calcium Hydroxide (lime)
Calcium Propionate
Calcium Stearate
Calcium Sulfate
Carboxymethylcellulose (sodium)
Casein
Cellulose Acetate
Clay (Bentonite)
Clay (Kaolin)
Copper Sulfate—Copper Salts (50 ppm)
Corn Starch
Corn Sugar (syrup)
Diatomacious Earth Filler
Dimethylpolysiloxane
Dimethylterephthlate—ethylene glycol condensate (polyester)
Ethyl Cellulose
Ferric Sulfate
Ferric Salts
Ferrous Sulfate
Formic Acid or Sodium Salt
Glycerin
Invert Sugar (sucrose)
Iron, reduced
Magnesium Carbonate
Magnesium Chloride
Magnesium Hydroxide
Magnesium Sulfate
Mannogalactan Gum (guar or locust bean)
Melamine Formaldehyde Resin
Methyl Cellulose
Methy and Ethyl Acrylate
Mono- and diglycerides (except lauric)
Nordihydroguaiaretic Acid (NDGA)—0.02%
Normal Propylgallate—0.02%
Oleic Acid (vegetable sources)
Oleic Acid Amide
Oxides of Iron
Phosphoric Acid
Polyethylene Glycol 400
Polyethylene Glycol 1500
Polyethylene Glycol 4000
Polymer of Dimethyl-Polysiloxane of 350 Centistokes Viscosity
Polymer of Urea-Formaldehyde
Polystyrene
Polyvinyl Acetate
Polyvinyl Alcohol
Poyvinyl Chloride
Polyvinyl Chloride-Acetate
Potassium Sorbate
Propionic Acid
Propylene Glycol
Pyrethrins in Combination with Piperonyl Butoxide (Pyrenone)
Resin Guaic—0.1%
Resins from High- and Low-Viscosity Polyvinyl Alcohol (fatty foods only)
Rubber Hydrochloride
Soap—(sodium oleate)
(sodium palmitate)
(sodium stearate)
Sodium Aluminate—Aluminum Hydroxide
Sodium Benzoate or Benzoic Acid—0.1%
Sodium Carbonate
Sodium Chloride
Sodium Hexametaphosphate
Sodium Hydroxide
Sodium Polyphosphate
Sodium Propionate
Sodium Silicate
Sodium Sorbate
Sodium Sulfate
Sodium Thiosulfate
Sodium Tripolyphosphate
Sorbic Acid
Sorbitol
Starch (pearl, cooked)
Starch, potato
Stearato Chromic Chloride
Sulfuric Acid
Talc
Terephthalic Acid-Ethylene Glycol Copolymer
Tetra Sodium Pyrophosphate
Trisodium Phosphate
Urea
Urea Formaldehyde Resin
Zinc Hydrosulfite—Zinc Salts (50 ppm)
Zinc Sulfate

### Canada: Production At Highest Rate in History

Montreal . . . Although Canada's pulp and paper mills operated at only about four-fifths of capacity, they enjoyed a reasonably satisfactory year in 1959, according to R. M. Fowler, president of the Canadian Pulp and Paper Association and the Newsprint Association of Canada.

Overall output equalled that of 1956, when all-time records were established. At the close of 1959, the industry was producing at a rate exceeding the highest levels in its history, even though production earlier in the year was lower than in 1958.

Final figure on woodpulp production in Canada last year will be close to 10,500,000 tons, about 5% higher than in 1958. Of this total, about 77% is used in Canada. Exports of pulp totalled 2,400,000 tons, an increase of 10%.

Newsprint production was up about 4%, although still 2 to 3% lower than the peak year 1956. Although Canada now accounts for a slightly smaller proportion of the world's newsprint trade, as a result of rising production in other countries, the mills enjoyed a satisfactory year, reports Mr. Fowler. Current increase in newsprint production in both the U.S. and Canada has touched a new all-time high.

### NPTA Wins Its Case With Bag Paper Mills

In May, 1959, The National Paper Trade Assn. issued a statement of policy, firmly opposing the action of several bag paper mills that had announced a policy of direct invoicing to their merchants' customers on certain types of business. As a result, there has been considerable discussion of the problem.

NPTA president, Floyd H. Blackwell, now reports:

"Bag manufacturers are again looking to merchants to provide the important service of direct financial contact with customers of merchants."

*A NEW PROCESS FOR JAPAN*

# Groundwood From Hardwood Chips

## Three leading integrated newsprint mills report success with Bauerite semichemical process and all three are expanding

**By JOSEPH NUGENT**
**Vice President and Mgr., i/c Sales Engineering, U.S. Machinery Co.**
**As told to PULP & PAPER on return from tour of Japan**

● Based upon the success of the Bauerite groundwood from chips process at Gould Paper Co., Lyons Falls, N.Y., and because of the expense of using softwoods and their scarcity in Japan, three Japanese pulp and paper mills decided to install this process.

The mills were designed by U.S. Machinery who made the original drawings and furnished much of the equipment. Sales service is provided by U.S. Machinery, Japan, managed by Shigeo Nakane.

All three installations were made almost simultaneously. The mills: Daishowa Paper Mfg. Co., at its Fuji mill, Jujo Paper Mfg. Co. at Kushiro, and Tohoku Pulp & Paper Co. One problem was whether to use cold caustic soda or hot sulfite impregnation. Cold caustic would give stronger pulp at the same horsepower as sulfite but would require bleaching. But hot sulfite having a brighter color could be used without bleaching. The Jujo mill decided to use hot sulfite; the other two mills used cold caustic with a single hypochlorite bleach.

The mills are using a mixture of Japanese hardwoods: beech, birch, alder, hemlock. An interesting fact about the results is that they are getting 90% yield of hardwoods per unit of wood, which is greater than usual yield from softwood groundwood because of the higher hardwoods density.

The end product is used as part furnish for newsprint. One of the companies immediately went to a 40% furnish of semichemical pulp added to kraft and groundwood; the others started at 10% but all now are using about a 30% semichemical pulp furnish and report no trouble with runnability on their newsprint machines.

Initial capacity of the Daishowa mill was 70 metric tons/day and the others, 40 metric tons. The Daishowa mill has a 175-cu.ft. capacity Bauer rapid cycle digester. Cooking time is less than 30 mins. for all three installations.

The digester is followed by a Pressafiner. Defiberization of the impregnated chips is in a Bauer 411FV double disc refiner. Pulpers are arranged in series for two pass refining. Strength development is accomplished in Bauer 442 pump through refiners. Stock is then rotary screened, rejects are returned to the double disc refiner and accepts from the screens go to Bauer Centri-Cleaners.

The Jujo and Tohoku mills each have one 200 cu. ft. rapid cycle digester; one Bauer Pressafiner; two Bauer 411s and one 422 refiner.

In the new expansion phase Daishowa is building a new mill at Hokkaido and it is adding three of the newly redesigned Bauer Model 560 Pressafiners, a Bauer M & D continuous digester capacity of 120 metric tons; six 411 refiners and four 442 refiners plus batteries of Centri-Cleaners. The other two mills are adding the same equipment except that they are staying with the rapid cycle digester, each mill adding three 200 cu. ft. capacity rapid cycle digesters.

All systems now in operation are completely automatic with one man controlling everything from chip bins through Centri-Cleaners. With each installation, Westinghouse Cypak units were incorporated. This was their first use in Japan and their feature is that they eliminate moving contacts and assure trouble free operation of the digester cycle. Changes in pressure, temperature or timing of any phases of the cooking cycle are automatically controlled by an integrated and interlocked system of switches, temperature transmitters and timers. The digester cycle provides for automatic loading of measured quantity of chips, air evacuation from chips, impregnation of chips with liquor, automatic return of excess liquor and automatic cooking phase in the vapor phase if desired.

### Two Engineers Tour Japan Report Much New to See

Joseph P. Nugent is vice president and manager i/c sales engineering for U.S. Machinery Co., Inc. They are the export agents for many U.S. pulp and paper equipment suppliers such as Bauer Bros. U.S. Machinery is also equiped to completely engineer pulp and paper mills the world over.

Mr. Nugent, in company with Lee Eberhardt, assistant to the president, Bauer Bros., recently toured the three Japanese pulp and paper mills described in this article.

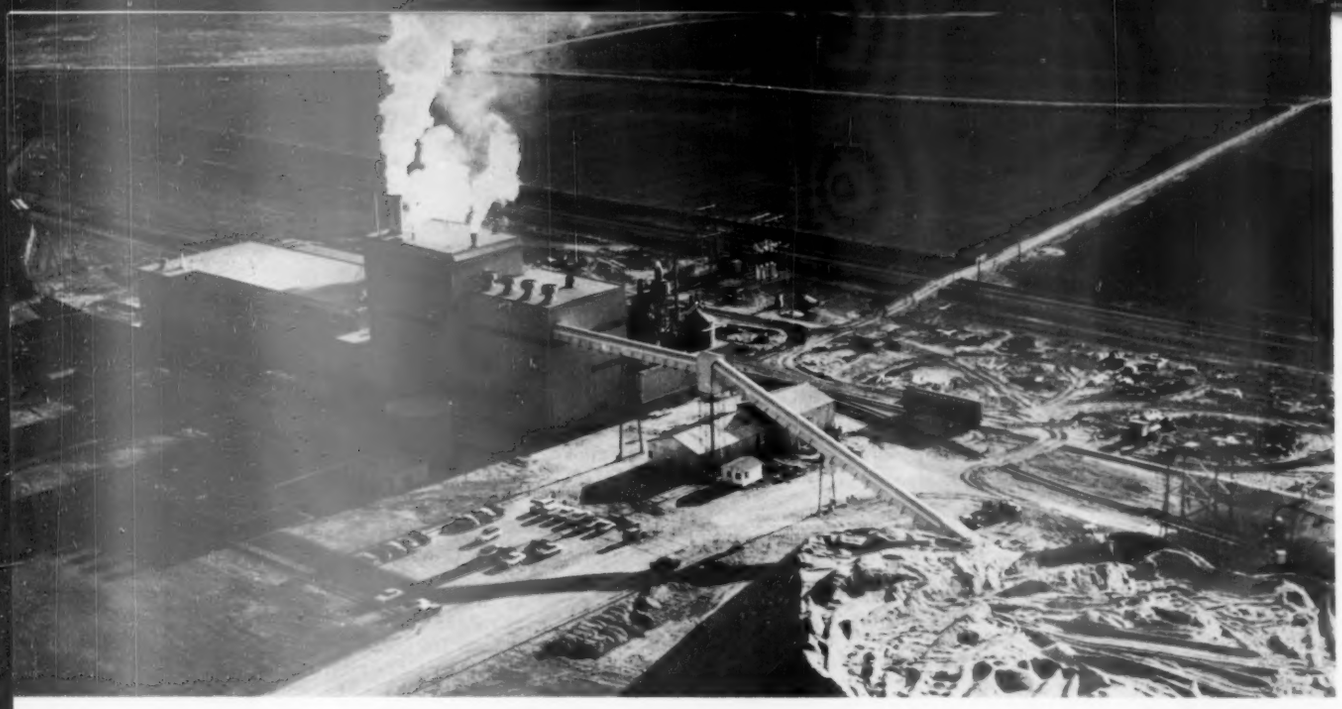
In an interview with this publication, Mr. Eberhardt expressed his admiration for the high quality of operations and production in the Japanese mills he had visited and said that perhaps papermakers of other countries should reverse the trend and take their cameras to Japan to see what is going on.

### "Digest of Sweden" Written For Reference by Kastrup

A 64-page booklet entitled "Digest of Sweden," written in English by Allan Kastrup, is available for 50 cents per copy (mail costs included) from The American-Swedish News Exchange Inc., 630 Fifth Ave., New York 20, N. Y.

Mr. Kastrup is a brother of Sverker Kastrup, general manager of Swedish Cellulose Co., Sundsvall, Sweden.

The booklet is arranged as a reference with sections on many subjects as regards Sweden—forest industries, labor and management, power development, engineering industries, arts and crafts, etc. There are some 40 pictures, a map and color cover. A section deals with Swedish relations with North America and immigration to North America.



1958—A UNIQUE PULP MILL. Chip pile at lower right. Office is low building at left. Recovery towers eight stories, hidden on other side is drying and baling room. Conveyor transports chips to 5-story pulp mill. Low section at left is causticizing room.

# New Mill and New Process

## Chemical pulp plant "of the future" is described for first time in this report. "Borrows" from other industries

By ALBERT W. WILSON
Editor, PULP & PAPER

—Missoula, Mont.

● A spectacular new kind of chemical pulp mill is in successful operation 13 miles to the north of this college town and railroad center of 25,000 inhabitants. It is producing a bleachable kraft pulp, continuously gas-flame dried and so compactly compressed into bales that no straps are needed. The bales are shipped nearly one-third across the continent to St. Paul, Minn., where they are made into paper products.

Now, integrated and compactly fitted into this industrial establishment, additional pulp facilities are being constructed, and also a modern paper mill. The concrete and steel wing for the paper mill is up already and by mid-summer the plant will be ready to get going on production of 400 tons of paper and 500 tons of pulp.

Thus, Montana has not only its first pulp mill, but also will have its first paper mill, and that leaves only seven of the 50 United States which have no pulp or paper industry. (The Dakotas, Nebraska, Wyoming, Utah, Nevada and Kentucky.) The "Treasure State," famed for its miners, cattlemen, sheepmen and wheat farmers, has discovered a new kind of treasure —pulp and paper.

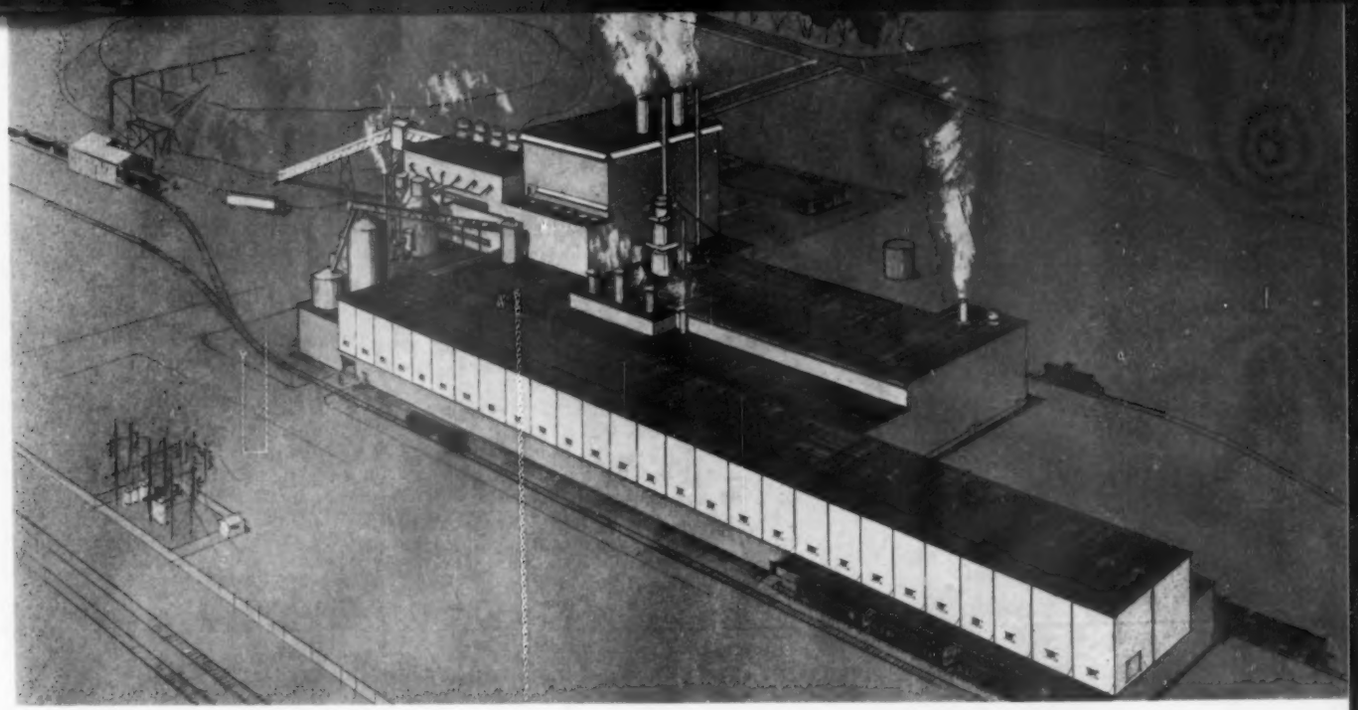
This new pulp and paper operation, dominating the broad French River Valley, and nestled betyeen lower ranges of the Bitter Roots to the west and the Rocky Mountains to the east, is owned by a new company—Waldorf-Hoerner Paper Products Co. A small group of Minnesota and Iowa "paper pioneers" have brought a new important industry to this western state of nearly 150,000 square miles, but only about 700,000 people.

President, general manager, and a director of this new company is Nels H. Sandberg and these unusually constructed and engineered units comprise a "dream-come-true" for him. Not only is the original chemical pulp making unit the first of its kind, it may very well prove to be "a mill of the future." The paper mill also will have unusual features, at least one or two of which have never been tried before. His associates have decided to name the 176 in. paper machine the "Sandberg" in honor of the distinguished industry engineer.

### Four Men are Directors

There are three other directors and associates with Mr. Sandberg. They are Paul A. Schilling, president and treasurer of Waldorf Paper Products Co., St. Paul; Richard N. Hoerner, president and chairman of Hoerner Boxes, Inc., Keokuk, Iowa,; and V. D. Shuck, vice president-finance and secretary-treasurer, of Hoerner Boxes, Inc. Mr. Sandberg is also executive vice president of Waldorf Paper Products.

Waldorf Paper Products Co. created the first unit here to make the new bleachable pulp for shipment to the



**1960—A PAPER MILL IS ADDED. Drawing shows plant as it appears from other side of the picture on the left hand page. Paper mill, in foreground, parallels part of baling and drying unit. Behind is pulp mill, higher power and recovery unit, and lower causticizing room.**

# Will Serve Middle America

parent mill. Then a happy union with Hoerner Boxes made possible the additions to pulping capacity and the paper mill.

The market for this product, unbleached kraft paperboard, will be the entire Mississippi Valley and the Plains States from Texas to Canada. It will be shipped in rolls to 13 Hoerner box plants (two new ones being completed soon in the South) and four Waldorf box plants and another under contract to Waldorf.

### The Parent Companies

Starting in the cereal field, as so many Midwest paper companies did, Hoerner has grown to the point where it produced one and one-half billion board feet of boxes in the first ten months of 1959. Waldorf, starting in the label and carton field before the turn of the century, while smaller than Hoerner in container manufacturing, has grown to be one of the largest integrated packaging operations under one roof in the country.

Waldorf's St. Paul operation includes a 250-ton-per-day semi-chemical pulp mill, producing both bleached and unbleached hardwood pulp. Two Fourdrinier and two cylinder machines are operated at St. Paul, making coated foodboard, special board and a regular line of boxboard. Waldorf's output at St. Paul is 800 tons per day and it is recognized as one of the most progressive companies in its field.

### Some Unusual Equipment

The new machine for Missoula will have a 176-in. wide and 140-ft. long Fourdrinier wire. It is being built by Beloit Iron Works. It will have two headboxes, and among novel features all screens will operate on a continuous bleeding cycle and a one-third normal sized Deculator will operate probably for the first time, on 1% consistency. These and other innovations will be described later.

Meanwhile, the all-steel and concrete paper mill building, 700 ft. long and 70 ft. wide has been completed, ready for installations. It has a 5-in. spruce deck roof covered with pitch and gravel. The mill is 50 ft. above grade.

This new pulp and paper mill, when all units are completed, is expected to represent a remarkably low investment. Some unusual things done in building and process account for a major part of the savings. The recognized experience of Mr. Sandberg and his associates was of course, a significant factor. Basic designs of buildings, orientation of equipment, specifications, and selection of material and equipment have all been carried out by the Waldorf engineering staff under the personal direction of Mr. Sandberg.

### Wood Savings—Boon to Sawmills

This mill is important as regards national and local Montana conservation efforts because it is making the first serious important use of what was formerly regarded as waste wood in the Treasure State. All of western Montana practically is covered with forests and dotted with many sawmills, but until now their wood residues went up in smoke. Thanks to Waldorf-Hoerner Paper Products, the waste wood burners have been dismantled or pulled down in many places.

Actually, as of this year, there will be 21 sawmills, some located nearby, others as far as 240 miles away, which will be making chips for the pulp mill here. In the first year of operation of the pulp mill, there were 11 sawmills supplying chips, so the number is being virtually doubled. Within the next two years, Waldorf-Hoerner expects to receive chips from all the sawmills

## . . . WALDORF

in the western half of Montana. Chips will come by train and truck.

It is very likely that some of these sawmills would have been shut down during the recession and the slump in the lumber market if it had not been for the timely construction of this first pulp mill unit. PULP & PAPER learned this from lumbermen themselves in this area. And by the same token, the pulp and paper mill will be insurance against forced shutdowns, probably, in the future. The chip revenue of these sawmills, is very substantial and in some cases represents up to 50% of their income.

In order to make 500 tons of pulp per day, the Waldorf-Hoerner mill will purchase 300,000 units of dry wood chips per year. A unit considered equivalent to a cord of pulpwood. The pulp mill maintains a normal stockpile of 50,000 units, and this is being done in advance of the additional production.

In some of these sawmills, and this may be close to the average, about 50% of their wood after barking goes to lumber, and up to 30% to chips. The rest would be sawdust and shavings. Most Montana species except cedar are okay for pulp chips. The pulp mill receives chips from Douglas, white, balsam and grand fir. Also from lodgepole, Western and ponderosa pine, as well as Engelmann spruce and Western larch.

Mr. Sandberg predicts wood waste from logging operations also will be brought in and used, possibly in the near future. Certain quality of trees and some species are not desirable for lumber, and there was very little use made of these trees in Montana. These will be valuable for pulp.

DIRECTORS AND PARTNERS IN NEW VENTURE

Nels H. Sandberg

Richard N. Hoerner

Paul A. Schilling

V. D. Shuck

## Wide Stretch of Mid-U.S. is Final Goal for Paperboard Products

Not until the final end products—paper containers and boxes—are at last unpacked in the store, or in the place where the product is actually to be used, does the new pulp and paper company at Missoula, Mont., fulfill its ultimate purpose.

This is a point that many sometimes be overlooked by paper and pulp makers but the partners in Hoerner Boxes, Inc., Keokuk, Ia., and Waldorf Paper Products Co., St. Paul, Minn., equal owners in Waldorf-Hoerner Paper Products Co., are very much aware of it.

The territory to be served by products from Missoula pulp and paper comprises 22 states covering the middle area of the United States from Texas to Minnesota, Wisconsin and the Dakotas and from Utah and Arizona to Alabama, Tennessee and Kentucky.

With two new plants being completed in the 1960 fiscal year, Hoerner has 13 converting plants and an associated company in Mexico. Waldorf has four converting plants and another under contract. Their sales area comprises more than half the area of continental U.S.A. It is important to note that these plants are in many imporant industrial centers of the nation, where great quantities of packaging is used.

Waldorf is familiar to many PULP & PAPER readers as one of the most important and progressive companies in the paper industry. Now that Hoerner has become a partner in papermaking, it will be known better. In its 39th year, 1959, its net sales to customers totaled $28,994,999, an increase of $2,896,469 over 1958. It paid out salaries and wages within the company of $5,630,694. Earnings increased from $1.07 to $1.15 per share.

Its packages are used to ship such unusual products as Clinton engines, outboard motors, bicycles, Honeywell instruments, turkeys—just a few items to indicate how paperboard, such as the Missoula mill makes, is proving more and more successful as a safe container for a wide variety of articles.

A Hoerner or Waldorf corrugating container plant takes the kraft linerboard made at Missoula and assembles it into a corrugated board. Many readers are familiar with the process—pasting of two kraft liners over a corrugating medium. Corrugating over rolls, a glue bath, tempering and drying, scoring and bending of box flaps, printing and slotting—these are the operations that take place at the converting plant. Sheets are stapled, glued or taped to form the closure, and boxes are shipped direct to customers in bundles, ready to set up and filled.

The performance of the box must be of high standard. Therefore, great dependence is placed upon the quality of workmanship at the paper mill for high quality liners, said R. N. Hoerner, president and chairman of Hoerner Boxes, Inc.

Each box company has its own sales force, covering an area of 100 to 200 miles from the factory, over which the boxes are distributed. A proper package must be designed and engineered and all these steps of utmost importance before the job that started at Missoula is really done, pointed out Mr. Hoerner.

WORKING ON THE "MOUNTAIN." Caterpillar D7 tractor equipped with No. 7A bulldozer is moving chips for position over Link-Belt feeders hidden far below.

# Pulp Mill—"A Really New Development"; Recovery and Power Units Being Expanded

## Non-conventional ideas are introduced here

Before going into a description of the existing and the new units at this Missoula mill, it should be noted that over many years, Mr. Sandberg and his Waldorf staff have been always on the alert to borrow successful techniques from other industries and apply them to pulp and paper making.

In the original pulp mill here; that is, in the bleachable pulp drying and baling section, Waldorf borrowed equipment from the sugar-press, corn-refining and malt industries (the Davenport presses), from agriculture and brewing industries (the high speed Heil-Arnold flash dryer), and from the cotton industry of the South (the Lummus baler).

The modifications which were made on this equipment, in order to apply it to this pulp mill, and the combination use of these Davenport presses, Heil dryers and Lummus balers, makes this the first chemical pulp mill of its kind in the world.

Viewing this mill for the first time, the president of another very prominent pulp and paper company, himself a pioneer of processing techniques and a creator of new mills of considerable repute, had this to say to the writer: "This is one of the really new and significant developments in our industry."

The quality of the Missoula pulp is very good. So far no limitations

UNLOADS IN 10 MINUTES. Rader Pneumatic equipment does job for specially built r.r. cars at Missoula's new mill.

ONE BUTTON DOES IT. Driver pushes button in background to hoist trailer to his White Autocar truck, dump chips from nearby sawmills.

CHIP STACKER AT WORK. Rader Pneumatic line blows chips to top of pile.

## . . . WALDORF

have been revealed. When the entire mill is in operation, only 100 tons will go to St. Paul—that is 100 tons on an average of each day's production. The other 400 goes direct to the paper mill, bypassing the drying and baling room.

### Problems Were Licked

In early operation some fines were lost in combustion in the dryer but now this loss is practically eliminated. Also, it was found that a little more power in refining will bring up the mullen.

This drying and baling operation is certain to be given consideration by other chemical pulp mills in the future, where shipment of the pulp is necessary. A somewhat similar operation to this has been done in Canada for groundwood in Nova Scotia and for hardwood pulp in Oregon, but this is the first for chemical pulp. Parts of this system were used in the others. But, considering the modifications and arrangements worked out here, and the quality of pulp, this is something novel and new in this industry.

### Buildings Designed for Quakes

Clean lines, compactness and sturdy structures feature this concrete and steel mill. Galbestos protected metal siding is hung on steel frames. The roof is built up by asphalt, paper, tar and gravel on metal. The mill seems small, as it is, because of the steps in production eliminated, or the processes which require less space than normally. Departments are strategically located in close proximity to associated processes and all under one roof. Fire walls separate other units from the drying and baling room. Another wall separates the pulp mill from causticizing and also from power and recovery plants. All buildings were designed to resist earthquake shock.

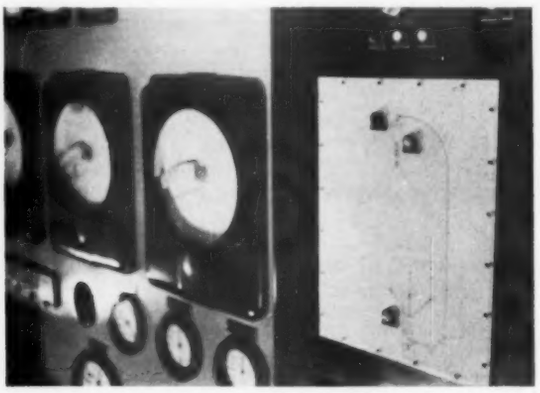
The pulp mill building is 423 feet long and 159 ft. wide, at the widest part. The recovery building is 102 ft. high. There will be two stacks 160 ft. high. Prevailing winds carry fumes away from populated areas in the high mountains.

A very attractive office building utilizes native Montana wood and stone effectively and big windows provide plenty of light.

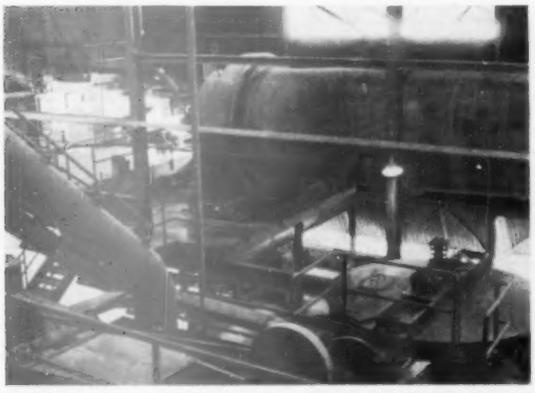
### Handling Chips At Mill

Rader Pneumatic and Link-Belt equipment are used to unload railroad cars at the rate of 40 chip units per hour. These are wooden gondola cars which have modified hopper bottom dumps. One railroad car is unloaded

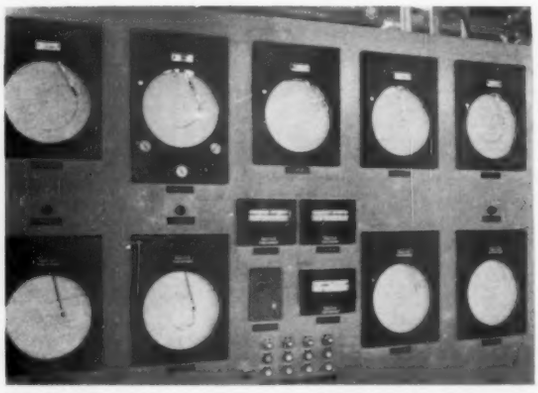
**PANEL FOR RECOVERY PLANT designed and equipped by Bailey Meter Co. for operation of Babcock & Wilcox 650 lb. pressure boiler.**



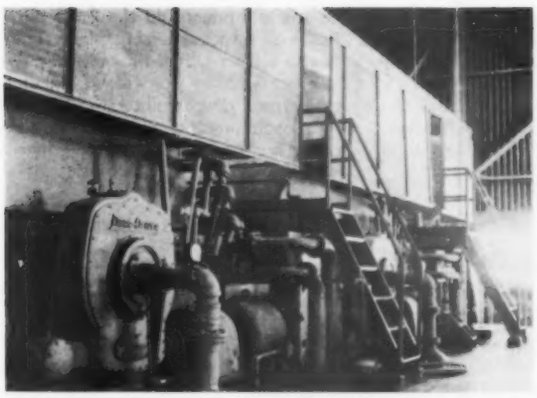
**CLOSEUP OF LEFT SIDE OF PANEL showing a graphic design by Bailey Meter Co., which shows the shot cleaning system for economizer section.**



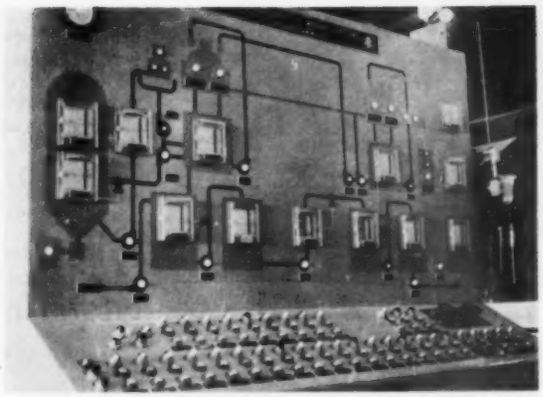
**NON-CONVENTIONAL IS THIS RECAUSTICIZING PLANT by Dorr-Oliver Inc. Looking across slaker, part of Allis Chalmers 170 ft. long lime kiln is shown.**



**CONTROL PANEL FOR RECAUSTICIZING done by Minneapolis Honeywell.**



**BIGGEST WASHERS MADE BY DORR-OLIVER. They are equipped with Reliance & Electric Engineering devices. Transite hood is by Drew Engineering Corp.**



**THIS GRAPHIC PANEL FOR BROWN STOCK WASHING was designed and equipped by Minneapolis Honeywell.**

in about ten minutes.

Meanwhile, alongside this is an unloading station for special chip trucks which may be unloaded simultaneously with the railroad cars. The driver of a truck, after backing the trailer onto a platform and hooking up the truck with lifting chains, pushes a button and the trailer is up-ended, dumping chips into a hopper over and underground Link-Belt feeder which can handle 50 units per hour.

To solve the problem of the chips piling up on the loading side of the hopper, a horizontal screw was devised and installed across the top of the hopper to distribute chips more evenly.

Working on top of a 50 ft. high pile of railroad car chips, built up by Rader Pneumatic blowers and Link-Belt unloading equipment, is a Caterpillar tractor which spreads chips beyond range of the unloading equipment and also reclaims chips into two hoppers, for feeding to the mill. Each hopper has a cone 40 ft. diameter at the top and 20 ft. at the bottom. The cones extend 20 ft. underground and only three ft. above ground. These feed to two big Link-Belt rotary table feeders, one at each hopper bottom. Another hopper under the truck unloader is 12 ft. in diameter. These underground feeders throw chips onto an enclosed Goodrich rubber belt on Link-Belt conveyors, with a Transweigh belt scale.

### To the Digester House—

Chips travel from the underground table feeders about 170 ft. upward at an angle to a Link-Belt trip feeder operating over the digesters.

Two new digesters will add 40 ft. length to the digester building, as there will be a lineup of six digesters, all by Chicago Bridge & Iron Co. These are 4500 cu. ft. digesters built with shells of 1 13/16 in. No. 285 carbon steel. The cones are 2¼ in. thick to give ample corrosion allowance. Five digesters will have direct cooking and the sixth will have both circulation and direct cook. A fairly soft cook is employed when the bleachable St. Paul kraft pulp is made. A higher yield cook will be employed for the pulp which will go to the new board mill.

There is automatic steaming and automatic relief on all digesters. Control and recording instruments are Minneapolis Honeywell. Digester relief and blow heat recovery units are by Rosenblad Corp. All digesters have Yarway motor-operated seatless blow valves.

### Washing and Screening

Cooked stock now goes to two new type small rotary pressure Impco screens, but a third one is being added. Rejects go to Bird Jonsson knotters. Accepts from knotters go to a No. 36-2 Sprout-Waldron disc refiner and rejects go back to digesters.

The biggest washers Dorr-Oliver Inc. makes were selected for this mill. A fourth is being added. Each is 11½ ft. diameter by 20 ft. face, with single drum. Presently, the first two operate in two stages and the third in a single stage. The washers have Drew Engineering Transite hoods and Reliance Electric & Engineering dc 20 hp drives. A graphic panel built and equipped by Minneapolis Honeywell is used for the washing system.

Horizontal filtrate tanks were built by Hydraulic Supply Co. in Seattle, were chosen, instead of the vertical type. More of these are being added. The vertical type would have been longer than the washers. The horizontal type were not only chosen because of space requirements but also in order to expose more surface for separations.

All pulp mill chemical tanks were by Hydraulic Supply Co. The pulp, at 12% consistency, drops to a conveyor and via high-density storage, goes either to the board mill or, as at present, to the American Defibrator Co. Davenport presses at the head of the drying and baling operation.

### Recovery Units

The eight-story recovery plant is immediately alongside the five-story pulp mill. The recovery plant is directly in line with the longer entirely housed recausticizing plant.

A new Chicago Bridge sextuple effect Conkey plate 6-effect evaporator is being added for the expansion. This is about 50% larger than the original Swenson sextuple evaporator, and together they easily take care of this year's needs. They are extensively done in stainless steel, and a tremendous amount of stainless steel is to be found throughout this mill. Honeywell instruments control the evaporating cycle.

A second Babcock & Wilcox recovery boiler duplicates the original, now in operation. Each is designed for 650 lbs. pressure processing of 900,000 lbs. dry solids per day, and production of 141,000 lbs. per hour of steam at 750° F. It is equipped with shot cleaning on the economizer only. Another Babcock & Wilcox Venturi scrubber is being added. Each boiler will have a cyclone evaporator. Clarage Fan Co. of Kalamazoo built one of the biggest draft fans it ever made, a 2-stage No. 19 RT induced fan to draw flue gases through the scrubber. Another will serve the new unit.

Graphic panels for both recovery and the new power unit were instru-

mented and designed by Bailey Meter Co. There will be a second recovery stack, each one 160 ft. high. Prevailing winds carry smoke into mountains to the north away from the mill area and the city of Missoula.

### Power is Being Expanded

A new 200,000 lb. per hr. Babcock & Wilcox power boiler is being built for the additional production. A small B&W package power boiler, now in use, will then become a standby. The latter is only 12 ft. high and occupies only 12 by 25 ft. of floor space. It produces 35,580 lbs. per hr. of steam with design pressure of 650 lbs. at 750° F. It burns gas and in case of need, will burn oil, as will be the case for new larger power boiler. The present Graver hot line Zeolite process for boiler feed water is being duplicated.

A new Westinghouse 7500 kw bleeder type turbine is being added. At present there is a Westinghouse 1,500 kw generator converting power. In both units, main breakers and switch control equipment is by Westinghouse. There will be four compressors, with a Chicago Pneumatic being added. The three Gardner-Denver compressors now used include two for mill air and shot cleaning and the third is a carbon ring type for instrumentation.

### Causticizing Non-Conventional

The Dorr-Oliver causticizing system at this mill uses both primary and secondary slaking. This results in less rejects and more use of the lime, and gives more slaking time, explained the operators. Lime consumption is very low.

A relatively new and non-conventional idea in this plant is the use of a larger diameter tray. The mill has a single tray and green liquor clarifier and operates the present lime washer and white liquor clarifier in parallel which would give capacity sufficient for 700 tons of pulp per day. Another lime mud washer for this capacity is being added by Dorr-Oliver. The installation is described as simpler, cheaper to install and providing better operation than is usual with previous installations. Controls are by Minneapolis Honeywell.

The Allis-Chalmers lime kiln is 170 ft. long, 9 ft. diameter on the hot end and 8½ ft. on the cold end. This kiln is being made adequate for the expansion by adding a cyclone dryer. The kiln is equipped with a chain section 30 ft. long and has a 7 in. brick lining at the hot end, which is thicker than commonly used, and a 6 in. lining at the smaller end. Lining was by Mexico Refractories. A Peabody scrubber is on the kiln.

A pan conveyor is used from the elevated kiln up to the primary slaker, which is also a new type. The kiln is completely housed in the same building with a recausticizing plant. There is also a Dorr-Oliver lime crusher.

Process water for this mill comes from three deep wells, rated at 2,000 gpm each and it was decided no filter plant was necessary.

## Pulp Drying and Baling: Process Used First Time for Quality Chemical Pulp

### New equipment introduced, may set patterns for others

The bleachable pulp for shipping goes directly to a separate drying and baling plant from Chicago Bridge high-density storage tanks, after washing. The adjacent pressing, drying and baling building houses the most novel equipment presently in operation. This is the first use ever made of this equipment to produce a quality chemical pulp.

There are four Davenport presses built by Davenport Foundry & Machine Co. and supplied by American Defibrator Co. The Waldorf mill in St. Paul is identified prominently with the first use of these presses in the paper industry. In 1949 Waldorf developed and introduced to the industry a new waste paper recovery process known as asphalt dispersion. Some 250 of these presses are now in use in the U.S.A. for asphalt dispersion. But here at Missoula is one of the most interesting new applications to which they have been put.

### Davenports Don't Curl Fibers

Stainless steel screw pulp conveyors of 16 in. diameter at the washers are increased to 20 in. diameter at the presses. The Davenport presses consist of two stainless steel compression discs, each on a different axis. There are holes in the discs for water to pass through. The presses do not curl or snarl the fibers, as the pulp is simply squeezed between the discs. This avoids matting and curling, which may occur in other types of presses, say the operators. With the Davenports, there are fewer fisheyes and nodules in the pulp.

Presses are driven by 10 hp Louis Allis motors hooked in series so that the same torque is applied on each disque. They are driven through Foote Gear Co. reducers.

Pulp is brought to 40% to 45% consistency in the presses. A surge tank is alongside the Davenports to return overflow from the presses back to the second washer.

### Heil Dryers Modified for Pulp

Next are the dryers. Pre-dryers using heated air are followed by the revolving three-pass drum Arnold dryer (Ardrier) made by Heil Mfg. of Milwaukee. For this mill the equipment, which has long been used in breweries and for drying farm products, is converted to a pulp dryer. Important modifications were made in the equipment.

One was to reduce and keep the heat under strict control, so as not to scorch or burn the air-borne pulp. A shorter flame had to be devised. Secondly, the inside dryer surfaces were improved, removing rivet edges or other rough areas or appendages, which had tended to hang up pulp. These were problems which arose in early weeks of operation and quickly corrected.

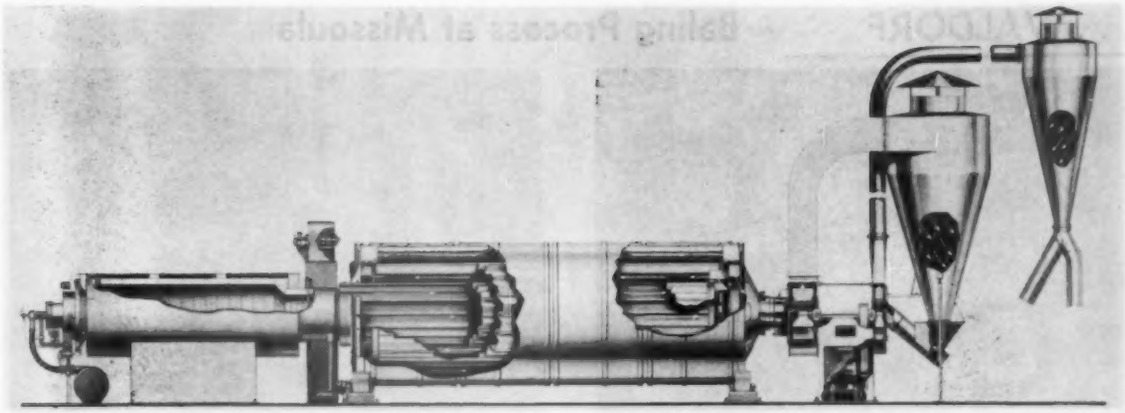
Hot air was reduced from 1100 to 1200° F. to not over 800. Wheelco Capacilogs are used, along with electric eyes and Flameotrols to control the gas flow.

The moisture content of the pulp is reduced with the pre-dryers, pre-heating the air which conducts the pulp into the Heil-Arnold dryers. This is critical because it facilitates more production through the main dryers.

Pulp comes from the presses at 40% to 45% bone dry consistency and is further dried to 45% to 50% in the pre-dryers. It comes out of the Heil dryer at 82% to 85%. The Missoula staff uses bone dry instead of air dry consistency as a truer measure, and because of the essential critical nature of their drying process.

### A Selective Drying Process

The Heil-Arnold dryers provide a speedy drying operation. Each one is equipped with a Peabody burner, normally burning gas, but equipped also for oil, and air-insulated to keep fuel costs at a minmum. Dryers are rated at 25,000 lbs. water evaporation capacity per hour. While the drums rotate horizontally, fluffed pulp passes through a center section or chamber, one of three chambers. It passes back



**IMPORTANT KEY TO SUCCESS OF MISSOULA PULP DRYING is indicated by arrows in this cross-section of Heil pulp dryer. Fluffed pulp passes through center chamber of main dryer, back through intermediate chamber, then forward again via outside section. A selective drying process is created—particles dry and become air-borne in proportion to size. Small particles move to cooler areas while others are still drying. From left to right: Furnace unit, pulp dryer, fan unit (small unit on floor), dryer cyclone and cooling cyclone.**

through the inbetween chamber, and then forward again via the outside chamber. The dryers are 10 ft. in diameter and 30 ft. long and the three passes are made in from a little less to a little more than a minute. As the pulp particles dry and become airborne, there is produced a selective drying process, as particles become airborne in proportion to their size.

This is actually a most important reason for the success of the entire drying system. Instead of going through at the same temperature, the smaller particles move to a cooler zone, while larger ones are still drying. A 60 hp driven fan at the end pulls the pulp through. A 7 hp drive rotates the dryer. There is a 10 hp drive on the pre-dryer fan. Model SD102 Heil Ardriers are used.

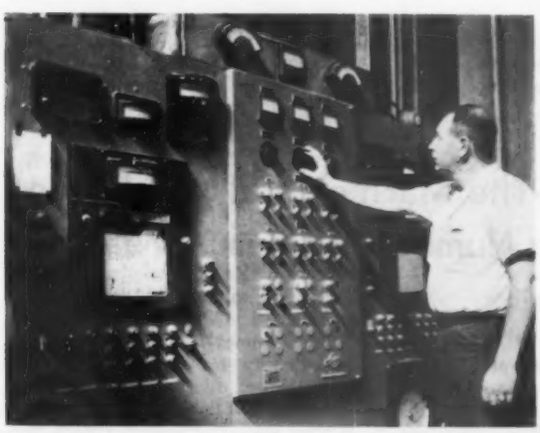
Electric controls on the dryers react instantly to any temperature change and immediately adjust the btu input to assure uniformity of drying. Dried pulp is discharged into a primary cyclone where the hot moist air is removed. A cooling fan and secondary cyclone provide a finishing action and cool the pulp prior to baling.

### Machine Makes Bales in 4 Minutes

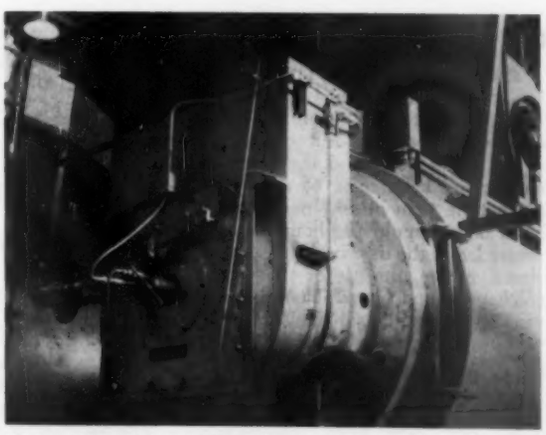
The baling process is the final step for bleached pulp. Three Lummus Cotton Gin Co. (Columbus, Ga.) balers were adapted for pulp. Pulp is blown into machine from the top and produces compact bales of pulp, 20 in. by 50 in. and 36 in. high, weighing about 700 lbs. each. There are two sections to each machine, so that the operation is continuous—while one side is being loaded, the other side is being pressed.

An indexing system moves a filled chamber to the pressure section and meanwhile the other section moves into position to be simultaneously filled. One machine makes bales of 45 to 50 cu. ft. density in less than four minutes. Two 14 in. hydraulic rams of 3,000 lbs. per sq. in. pressure are used. They exert a platen pressure of 1⅛ million lbs. to make the bales. An automatic pressure switch regulates bale density. No straps are needed on the bales, because of their high density.

Two Clark lift trucks swiftly pick up and deliver two bales at a time to railroad cars.

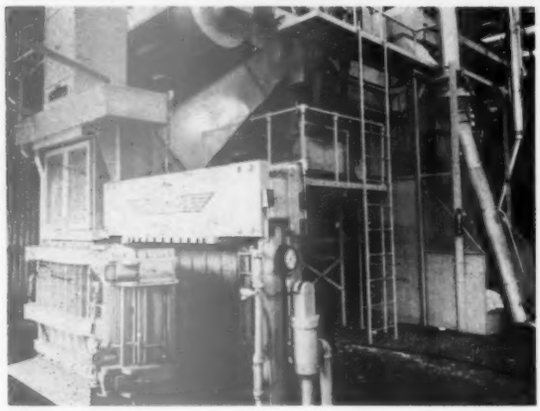


**FLASH DRYING—WITH THESE CONTROLS. Wheelco Capacilogs are used, along with electric eyes and Flameotrols to control gas flow.**

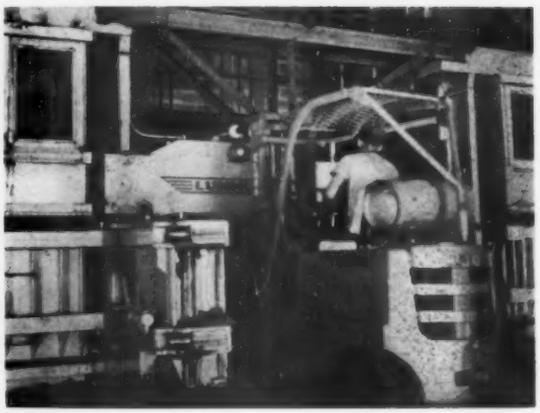


**COMBUSTION CHAMBER AND BURNER. The Heil dryer (see cross section at top of page) follows.**

## . . . WALDORF Baling Process at Missoula

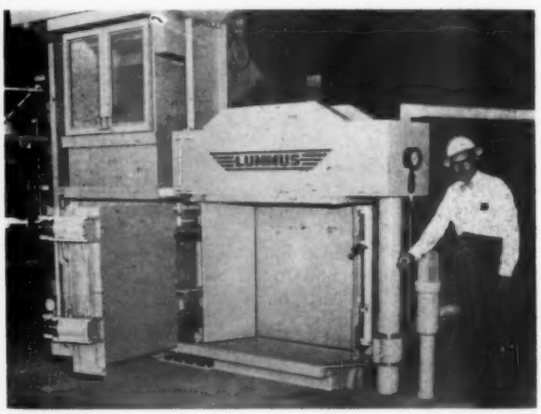


ONE OF THREE Lummus Cotton Gin Co. balers, with door slightly open.



CLARK LIFT TRUCK lifts out completed bale, while another is being pressed in compartment alongside.

THIS IS WHAT BALE LOOKS LIKE. No bands are needed, it is so compact.




PRESIDENT SANDBERG at lever, opening door of baler.

### Dust Problem Being Relieved

The major problem in adapting the Lummus balers to pulp was the dust. This does not arise when the balers are used for cotton. But the nature of the fluffy pulp, and the fact that many more bales must be made in a given time than of cotton (16 or 17 bales of woodpulp per hour for each press) led to the dust problem. A more closed system, the use of air systems efficiency, and good housekeeping were steps taken to solve this problem.

### Three Ponds Handle Effluent

The effluent problem of this kraft pulp mill has been successfully handled by the building of three retention and liquor settling ponds. One is of 12 acres, the next of 15 acres, and the third of 75 acres. Flow into the Clark Fork River here is carefully controlled after the settling process. The river at Missoula has a flow rate averaging about 2,100 ft./sec. and ranging up to 5,000 ft./sec. This is a factor which removed serious waste water problems.

## Paper Mill—The Machine and Auxiliaries Will Have a Number of Unusual Features

### Unique use of Deculator and unusual screening

The new paper mill at Missoula, due for startup this summer, will have many distinctive new arrangements. The machine, with 176 in. wire width, and a length of 140 ft., is by Beloit Iron Works. It will have a pressure inlet and primary and secondary headboxes, to make 400 tons a day of paperboard

Stock comes from Chicago Bridge high-density towers, equipped with Dorr-Oliver dilution and agitation equipment. It flows to an E. D. Jones & Sons stock preparation system preceding the machine. A buffer chest provides 30 ton capacity for obtaining uniform consistency. From here stock

**LATEST AERIAL VIEW at Waldorf-Hoerner mill. Long building in foreground is new paper mill. Also under construction is expansion of pulp mill.**

is pumped to five Double D Jones refiners. Four are for primary stock and one for secondary. Each one will be driven by a 800 hp 80% power factor Electric Machinery motor with EM controls. There is one specially designed Foxboro control board for all stock preparation and all pumps and complete wet end control from a single station.

There are two sets of fan pumps. All stock goes first to a Deculator, which will be the first one to operate on a consistency of 1%. The normal consistency for board going to wire is .4% or .5%. This Deculator will be about one-third normal size. Its purpose, of course, is to remove air from stock by constant vacuum. From here stock goes into suction of the fan pump. The primary fan pump is a Goulds 23,000 gal. capacity to the machine, taking stock from the Deculator. All other pumps in the mill will be by Warren Pumps, Inc.

### Screening System is Unusual

A novel screening system is also to be used. There will be four primary screens, all No. 14 Bird Centriscreens, between fan pump and primary headbox. With these will be one No. 10 Bird tailing screen. To the secondary headbox is a single No. 14 Centriscreen and no tailing screen. All screens will operate on a continuous bleeding cycle. The bleeding lines will have Foxboro magnetic flow-meters so the bleed can be adjusted and controlled. The bleeder line is connected to two stages of Bird Machine Co. Cycleans, for both primary and secondary stock. The Cycleans are to remove sand and grit.

### Features of the Machine

The Fourdrinier will be a standard, removable type with latest Beloit features, including five flat boxes and a Flo-Vac unit. This latter is a rubber belt mechanism with holes, floated in water, which achieved a vacuum, replacing more flat boxes, and it enables the machine to run a higher percentage of secondary stock.

There are four Nash Engineering vacuum pumps to be provided, all four being driven by one 800 hp Electric Machinery synchronous motor.

The Fourdrinier is equipped with a new Beloit wire roll drive. There is a dandy roll. A 42 in. diameter couch is driven by a Reliance Electric & Engineering Co. helper drive.

There will be two 32 in. diameter suction presses. The machine will have a total of 93 dryers, each 5 ft. in diameter. About 45% up the dryer section will be a smoothing or breaker press. Then comes a size press at the end of the paper dryer section, to be followed by 14 after-dryers.

There will be two 8-roll calender stacks of open side construction. Then three calender dryers. A Beloit uniform speed reel is to be followed by a Beloit rewinder. The latter will have a Reliance Electric direct drive coupled with a Horton Mfg. Co. pneumatically controlled brake.

### Some Machine Auxiliaries

Paper machine drive will be a Beloit Hypoid system with Extremultus short center belting. The prime mover will be a 1600 hp Westinghouse turbine.

The insulated paneled hood of galvanized steel is being designed and made by Drew Engineering of Portland, Ore., along with all heating, ventilating and air conditioning for the paper mill.

A Ross-Midwest Fulton drainage system is to be used, with all instrumentation for steam and drainage by Minneapolis Honeywell.

An E. D. Jones 2-element broke pulper will be located under the calenders and broke will go to a Dorr-Oliver 9½ by 16 ft. saveall decker.

Couch and wire pit, decker pit and all other tile work is being done by Stebbins Engineering. All stock and white water piping will be stainless steel. Northwest Copper in Oregon and Felker Brothers in Wisconsin are doing the stainless steel fabrication, which is a tremendous order. Numerous stainless steel stock valves are being made by Hilton Products Co. in Seattle and DeZurik Corp., Sartell, Minn. All consistency regulators are DeZurik.

Sometimes this summer all the units of this new Montana industry—its first in paper and pulp—will be rolling and one of the genuinely new developments in this field in the world will be on full throttle. All the way through, originality and ingenious engineering will set this mill apart from others throughout the land. Mr. Sandberg, his partners and his staff of technicians and engineers, however, are already operating a mill that can be described as "really new."

## Outstanding Program Set For NPTA in New York

An outstanding four-day program, with the theme "Setting Our Sights On the '60's", is being assembled for The National Paper Trade Association's 57th Annual Convention in New York, according to Executive Secretary O. Glenn Leach. The convention, at The Waldorf-Astoria, opens Sun., Mar. 27 and closes Wed., Mar. 30.

"Indications are that paper mills have budgeted huge expansion programs in 1960 and paper merchants —America's No. 1 paper salesmen— will want to hear first-hand reports on their roles in creating the markets and the sales plans to merchandise this stepped-up output," said Mr. Leach.

Some 150 exhibitors will participate in The Paper Show, sponsored by the N.P.T.A.

## Wausau Paper Mills Uses a New Slogan

No doubt symbolic of an important current trend in papermaking, Wausau Paper Mills Co., Brokaw, Wis., has launched what it describes as a new "trademark"—it is the slogan, "Made with Extra Care." A letter from President D. B. Smith says it will be used in promotion and merchandising.

# Problem at the Suction Roll

## . . . where hole markings pose a serious question for the industry. An expert discusses cause, effect, solution

By W. S. WIGHTMAN
Assistant Chief Designer
Albany Felt Co.

● Post-war demands for greater production have resulted in significant increases in the speed of most types of paper machines. Much of this is the result of new designs, better materials and equipment, improved felts, increased use of suction rolls—all aimed at removing water quickly from the sheet in the press section rather than by evaporation in the dryer.

These increases have not been accomplished without problems. One of these is suction hole marking. When it occurs it can be most persistent and is an ever-present problem in the industry today.

Suction hole marks are simply the impression left by the drilled pattern of the suction roll over which the sheet has passed. They may not be readily apparent in the dry sheet, but they show up later when a sheet is coated, given a surface dye or covered with ink during printing.

Most suction rolls consist of a shell (usually made of a centrifugally-cast bronze alloy or stainless steel) with a rubber covering.

Thousands of small-diameter holes are drilled through the roll, and a spring (or air-loaded) suction box is located on the inner surface. The action of the suction box extracts water from the paper and pulls it down into the holes of the roll.

Many mills use suction rolls without the rubber covering, although it is generally agreed that hole marking is less likely to occur with a rubber-covered roll. Also, a bare metal suction roll can be very hard on a felt, causing a severe abrasive action.

Suction hole or shadow marks in the sheet are caused by a difference in water removal between the drilled hole and land area of the suction roll. Each hole in the roll makes a "biscuit" of dry area in the sheet surrounded by a wet ring caused by the land area of the roll. (Fig. 1)

There are a number of factors that can cause shadow marking; one or a combination of several may be responsible. The cure in one mill may sometimes aggravate the condition in another. Each case must be handled as a separate problem.

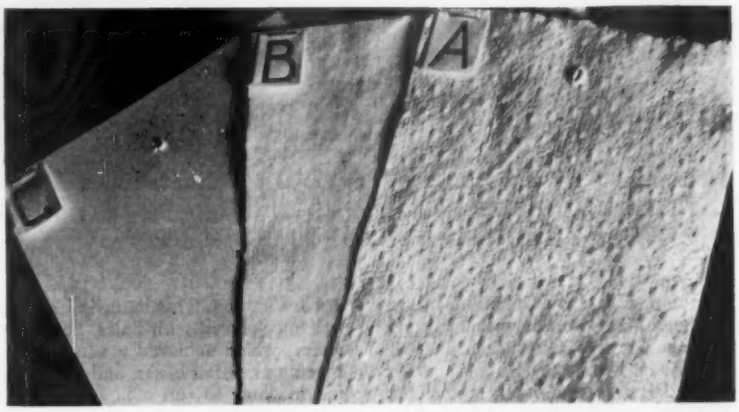



**FIG. 1—FOOD CONTAINER BOARD SAMPLES FROM THREE-PRESS FOURDRINIER, first and second presses suction, third plain. Sample "A" taken after second suction press shows drilled pattern of suction roll and wire and felt marks. "B," taken after smoothing press following third plain press, shows drilled pattern almost ironed out, wire and felt marks reduced. "C" is wire side of finished board, showing shell mark completely eliminated.**

Most common factors contributing to shadow marking by a suction roll include: position of the suction box; size of drilled holes and drilling pattern; hardness of top and bottom rolls; press weighting, and type of felt used.

### 1. The Suction Box

The best position of the suction box must be established through trial and error. In one case, tilting the box toward the wet end so that more water is pulled from the felt before it passes through the nip area may be the solution; in another, it may be more effective to tilt the box toward the dry end to prevent water (hold by suction in the holes of the roll) from being tossed back onto the felt by centrifugal force after passing the nip.

### 2. Size of Drilled Holes

Careful balance must be maintained between the drilled area and roll strength, because roll strength decreases rapidly as drilled area is increased. Furthermore, nip pressure in general is limited by reduced strength of the drilled suction roll shell. Consequently, drilling patterns have been worked out that permit far greater nip pressure and water removal than was considered possible a few years ago. Reduction of the size of the drilled holes is often effective in reducing shadow marking, and special drilling patterns have been developed that minimize such marking on book, bond and similar grades.

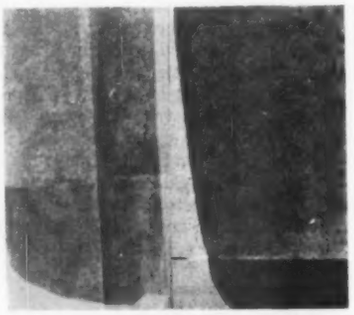


**FIG. 2—"INVISIBLE" SUCTION HOLE MARKING REVEALED BY INK TESTS. Both samples were taken from same coated magazine stock and were given ink test. Only sample at right bears evidence of shadow marking.**

### 3. Hardness of Rolls

Top and bottom rolls can contribute to shadow marking. With a hard rubber covering on the rolls, nip pressure is apparently concentrated in a narrow line across the width of the

sheet. This results in a significant pressure differential between the land and drilled area of the roll, and the drilled pattern may show up on the sheet. Conversely, softening the rubber covering widens the nip and distributes the pressure over a wider area. This helps equalize the pressure between the land and drilled areas and reduces the chance of shadow marking.

### 4. Press Weighting

Excessive press weighting may lead to suction hole marking. If for some reason pressure is raised from 200 to 300 lbs. per lineal inch (assuming the vacuum remains unchanged), pressure drilled areas will be increased, resulting in a significant water removal differential, and the drilled hole pattern may show up in the sheet.

### 5. Type of Felt

Felts themselves are no sure cure for shadow marking. They can help minimize it on the one hand and on the other actually cause it. Consider the case of a felt that is filled up and packed down. When it was new, clean and bulky, no shadow marking occurred. Now, instead of cushioning the web, the felt is hard, thin and filled up and does little or nothing to widen the nip area and distribute the pressure. Result is a significant difference in water removal between land and drilled areas of the roll. Shadow marking results.

Normal suction press felts range in weight from 2.75 oz. per sq. ft. to 3.1 oz. per sq. ft. In cases where suction hole marking occurs, however, felt weights of up to 3.5 and 4 oz. per sq. ft. are not uncommon. The bulk and resilience of these felts are essential to good absorption in the nip; and by dispersing the action of the suction as well as widening the nip they can equalize the water removal from the sheet.

A high-speed kraft mill had a serious shadow marking problem on the third "hot" suction press. Bulkier felts were supplied. But, a 5.25-oz. felt did not overcome the condition.

A felt service engineer suggested that softer rubber covering on the bottom suction roll be tried. A new roll with a plastometer reading of 40 instead of 25 was installed. In addition, drilled holes in the suction shell were reduced from 3/16 to 1/8 in. The top roll in this case was Stonite. Result: very satisfactory finish is obtained with a 3.25-oz. felt.

Three tests have proved effective in detecting suction hole markings and have been developed.

1. On coated papers, red ink is applied with a spatula to the wire side. This is left on the paper sample for one min. and then wiped off with a cleansing tissue, which immediately brings out any suction hole markings that may be in the sheet. The ink, labelled "Red Ink—Y73010," is manufactured by Inter Chemical Corp., Printing Ink div., Chicago, Ill.

2. On uncoated papers, a blue ink is used. This is also applied on the wire side but wiped off immediately after application. Otherwise, it will become too dark to bring out the suction marks. In the case of super-calendered papers, this ink must be applied *Before* it is coated.

The ink, "K & N Blue Testing Ink," is manufactured by K & N Laboratories Inc., Evanston, Ill.

These ink tests have been found extremely helpful in determining which "sets" of felts are minimizing the effect of suction hole marks more effectively and, consequently, which felts provide the best finish.

3. A third method of testing is to simply dip the sample in a tray of kerosene. This immediately brings out any shadow marks that may be in the sheet.

## Sales and Earnings – Nine Months 1959

### Representative Pulp and Paper Companies

| | Net Sales (000) | Income Bef. Taxes (000) | % of Sales | Net Income (000) | Net Per Share |
|---|---|---|---|---|---|
| **MARKET PULP (ALSO LUMBER, ETC.)** | | | | | |
| Georgia-Pacific Corp. | $140,465 | $ 19,620 | 14.0% | $11,336 | $2.15 |
| Puget Sound Pulp & Timber Co. | 24,582 | 6,993 | 28.4 | 3,357 | 1.29 |
| Rayonier, Inc. | 95,993 | 16,644 | 17.3 | 9,595 | 1.74 |
| Weyerhaeuser Co. | 344,568 | 77,247 | 22.4 | 46,877 | 1.55 |
| **NORTHERN INTEGRATED COS.:** | | | | | |
| Consol. Water Power & Paper Co. | 62,803 | 10,908 | 17.4 | 4,930 | 1.93 |
| Fiberboard Paper Products Inc. | 90,396 | 8,274 | 9.2 | 4,123 | 2.36 |
| Glatfelter Co., P. H. | 20,327 | 3,770 | 18.5 | 1,704 | 2.34 |
| Great Northern Paper Co. | 42,788 | 2,260 | 5.3 | 1,083 | 1.04 |
| Hammermill Paper Co. | 45,546 | 4,277 | 9.4 | 2,161 | 1.74 |
| Oxford Paper Co. | 54,109 | 3,475 | 6.4 | 1,610 | 1.22 |
| Warren Co., S. D. | 52,625 | n.a. | — | 3,638 | 3.36 |
| **INTEGRATED-NORTH & SOUTH COS.:** | | | | | |
| Champion Paper & Fibre Co. (Fiscal yr 3/31)- (4, 1 & 2 Qus.) | 141,484 | n.a. | — | 7,194 | 1.55 |
| Container Corp. of America | 73,414 | 8,683 | 11.8 | 4,179 | 0.39 |
| Crown Zellerbach Corp. | 393,007 | 55,303 | 14.1 | 28,966 | 2.03 |
| International Paper Co. | 768,840 | 121,831 | 15.8 | 60,422 | 4.58 |
| Mead Corp. | 245,530 | 22,054 | 9.0 | 10,427 | 2.06 |
| Riegel Paper Corp. | 53,624 | 5,037 | 9.4 | 2,497 | 1.88 |
| St. Regis Co. | 317,848 | 36,973 | 11.6 | 19,773 | 2.20 |
| Scott Paper Co. | 219,363 | 35,183 | 16.0 | 17,708 | 2.20 |
| Union Bag-Camp Paper Corp. | 135,162 | 29,593 | 21.9 | 14,043 | 1.90 |
| West Virginia Pulp and Paper Co. Fiscal yr 10/31)- (2, 3 & 4 Qus.) | 177,498 | n.a. | — | 9,020 | 1.69 |
| **NON-INTEGRATED PAPER CO.:** | | | | | |
| American Writing Paper Corp. | n.a. | 963 | — | 462 | 1.71 |
| **CONVERTER CO.:** | | | | | |
| Dennison Mfg. | 30,441 | 3,140 | 10.3 | 1,575 | 2.44 |

n.a.—not available.

The sales and earnings for the nine months of 1959 were especially prepared for PULP & PAPER by Cyrus J. Lawrence & Sons, members New York Stock Exchange, from statistical services and published reports. While the figures are believed to be correct, no guaranty is given as to their accuracy.

# Canada-Russia Competition

## foreseen in five to eight years by Fowler of CPPA. It will be in pulp and paper, he says. He sees Canada as Soviet's chief rival

—Montreal

● The triple explosion in world literacy, world industry and in world population will trigger an even greater explosion in demand for pulp and paper. As a result, there will be "brilliant opportunities" for Canada's pulp and paper industry in the Sixties. This is an assessment by Robert M. Fowler, president of the Canadian Pulp and Paper Assn., at its annual meeting in Montreal's Queen Elizabeth Hotel, Jan. 25 to 29.

There are decisions which Canada must make in 1960, he asserted, which will profoundly affect its prospects in the Sixties: Peaceful competition, cooperation within the industry, labor relations and international trade

On the technical front, CPPA's technical section made some outstanding contributions: An appraisal of Soviet Russia's pulp and paper industry; an all-day symposium on the fundamental chemical differences between sulfiite and kraft pulps; a closer look at the Inverform process; preventive instrument maintenance; the Sulzer vacuum system; a new digester sampler.

### "Peaceful Competition"

Borrowing what he called a "dynamic concept" from Russia's Khrushchev President Fowler emphasized that Russia is now prepared "to meet us and face the test of our system, our methods and our beliefs. If they were ever afraid of us, the fear is gone. You cannot compete, peacefully or otherwise, unless you meet your competition: Tearing down barriers, taking your chances in a free exchange of strength and skill."

Peaceful competition, contended Mr. Fowler, is a "synthesis of the problems we must face in Canada. This emerging problem of Russian economic competition is the great basic issue that faces the Western world. It is clear it will affect Canada more directly and seriously than other Western partners and may well affect our pulp and paper industry most of all.

"At the moment," stressed Mr. Fowler, "we have a respite. By 1965 or 1968, their domestic requirements, which they can rigidly control, may be sufficiently met, and Russia may then emerge as a major exporter of pulp and paper products.

"In Russia, they cannot only control domestic requirements, turning on and off at will the volume of use at home, but they can also control costs of production and there is clear evidence that the Russian planners are determined to carry out their economic programs without inflation and indeed with a lowering of costs and prices. In Canada, we have no such control over either domestic use or production costs and no one would wish to exchange our free economy for the regimentation and restrictions of the Russian system.

"But when the full impact of Russian competition in world markets strikes us five or eight years hence, we may find that our costs meanwhile have increased and pushed our prices up to levels where we cannot compete in world markets. It is what we do this year and over the next five years that will decide if we can run in the race at all."

### Competition within Industry

Competition, Mr. Fowler affirmed, when taken to extremes, is destructive not only to the individuals who are competing but to the economy and society as a whole. Departing from his prepared speech, Mr. Fowler, recalled the "Dirty Thirties," alluding to disastrous effects of overexpansion and price cutting in that era.

Mr. Fowler suggests that the industry, while maintaining competition between companies, could build up cooperation between them in legitimate and constructive directions. "For many years," he stressed, "we have had much greater interchange of technical information and research and statistics than they have in Europe."

Mr. Fowler said each individual and company "in reaching his or its own decisions should constantly recognize that what he does will affect others in the industry. In an industry that is as competitive as this, there is no such thing as an isolated or separate or secret action." While definitely not suggesting restrictions by overall agreement or government regulations, Mr. Fowler did suggest that when any decisions as to the scale of operations or sale of product were to be made that "you should take into account the probable effect it will have on the actions of your competitors." This ostensibly was aimed at preventing an overexpansion phase in

### Canada's Pulp and Paper Production Up 6% for 1959

| | | |
|---|---|---|
| TOTAL PULP | Up 6% | 10,639,529 tons |
| CHEMICAL PULP | Up 6% | 4,992,000 tons |
| Kraft Pulp | Up 16% | 2,264,000 tons |
| Newsprint | Up 5% | 6,394,172 tons |
| Paperboard | Up 30% | 953,380 tons |
| Fine Paper | Up 9% | 277,734 tons |
| Coated Paper | Up 10% | 33,467 tons |
| Wrapping Paper | Up 10% | 318,852 tons |

any single industry segment such as occurred within the last three years in newsprint and market woodpulp.

### Labor Relations

"We should recognize," he stated, "that we in Canada can easily be unduly influenced by labor relations in the United States. With our close contacts, our many affiliations of both companies and unions, and our extensive trade, the penetration of Canada by American influences on labor matters is powerful and continuous.

"It is extremely doubtful if Canada can afford to adopt American labor rates at our present stage of economic development and with our much greater dependence on export trade. If we seek to do so, we shall retard our development and may find ourselves unable to compete in world markets. I am suggesting that our labor rates and labor policies should be Made in Canada—not Made in U.S.A.".

### International Trade

In concluding his annual report, a climax of the Canadian Paper Week activities, Mr. Fowler spoke of the dangers of Canada being excluded from the European Common Market, the Outer Seven and other regional trading arrangements emerging throughout the world. He urged continued Canadian support of GATT. "Under the system embodied in the General Agreement," he said, "Canada has greatly prospered, but if it is no longer our primary objective what have we to put in its place? As an industry heavily dependent on export trade, what are we doing about the mounting chorus of protectionism here at home?"

## Russian Industry Appraised by Canadians

An assessment of the present status of the Soviet pulp and paper industry was an extra treat of the CPPA Technical Section meetings. The appraisal was based upon a 3-week tour of 8 pulp and paper mills in Russia by a 10 man delegation from the Canadian industry. Sponsored by the Pulp and Paper Magazine of Canada, the group traveled some 5,000 miles.

Essentially, the Russian pulp and paper industry, summarized the delegation, is about 20 to 25 years behind the North American industry and Russian pulp and paper industry leaders recognize this. This situation will be changed quickly, they believe.

There has been much interest in the Soviet's industry, stemming partly from the lack of knowledge of what was really going on in Russia and stimulated by Russia's scientific progress as evidenced by the sputnik launchings. A further inducement to learn more about the Soviet Union was its activities on the pulp export market in 1958 and 1959.

A first on-the-spot report made by an experienced observer of the industry was presented in the pages of this publication in 1959 based upon a visit to the Soviet Union by Editor Albert W. Wilson. In addition, the American Paper & Pulp Assn. has issued an appraisal of the Russian industry prepared by Eric Lagerloef.

Basically, what the industry has learned from these reports and visits is that at the present time the industry is not up to Western papermaking standards but is making fast progress to change this. Just how far the industry will go depends upon the Soviet leaders. If they believe it is to their advantage to embark upon world trade in pulp and paper, they can turn off domestic demand at will and export their production. At present, Soviet researchers in pulp and paper now outnumber Canadian research men by a margin of almost 10 to 1. For each million tons of pulp and paper production, Canada now has 62 researchers. In Russia they will soon have 580 researchers for every million tons of product.

**COMPARING NOTES at CPPA Meeting: Irving C. Jennings (left), chairman of the board, Nash Engineering and his friend of long standing, George Sheldon, joint managing director of Walmsleys (Bury) Ltd. exchange vacuum requirement ideas on the new Inverform unit which Walmsleys built for St. Anne's Board Co. Ltd.**

## Revolutionary Papermaking Method Selected as Stadler Lecture Subject

### Many questions asked on Inverform process

To break through the speed barrier imposed by cylinder mold machines, St. Anne's Board Mill Co. Ltd., at Bristol, England, has come up with what has been called the "third method" of papermaking. Some see in its design, the first true change in papermaking since the Fourdrinier.

The Inverform (see PULP & PAPER, April 1959) uses multiple wires positioned over a conventional Fourdrinier. On a 30-in. wide pilot machine, speeds exceeding 3400 ft/min. have been reached, and delegates to the CPPA meeting saw movies of the sheet being formed at such high speed. Because the pilot machine did not have a dryer section which could hold the sheet being so formed, St. Anne's had to open the door and let the sheet go.

At Montreal, the paper on the Inverform by Leslie A. Lawrence, technical mgr., St. Anne's, was selected to be the Stadler Memorial Lecture.

Strength characteristics of the commercial production are favorable to normal machine production and the sheet is more square, more even and has better bulk. Ply adhesion, too, is better. The sheet has a solids content of 40% entering the dryers. The advantage of multi-ply papers is that each layer has special characteristics such as burst, strength, tear.

### Wire Mark Not Deep

Mr. Lawrence said the wire mark is an indentation easily removed by pressing and that the wire mark from the Inverform is not as deep as the Fourdrinier mark, pressure is less and there is no trouble in eliminating the mark.

Inverform production has a much more even substance across the width. The sheet is formed as it enters the nip of the top and bottom wires. Upward dewatering, caused by the momentum of the stock, is a feature and this is accomplished by an upward dewatering slice called an Autoslice.

Four Inverform units were installed on a rebuilt 140-in. trim machine at St. Anne's, built by Walmsleys. Speed potential of the rebuilt machine is 2,000 fpm; speed potential of a new

**INVERFORM PROCESS IS DISCUSSED by panel. From left are B. W. Atwood, and Reginald Thomas, managing director, St. Anne's Board Mill Co. Ltd., Jack McK. Limerick, director of research and development, Bathurst Power and Paper Co., who chairmanned session and L. A. Lawrence, St. Anne's Board, who delivered lecture.**

20-in. pilot machine is 5,000 fpm. A second commercial Inverform machine with improved designs is being installed in Australia.

Top speed on the rebuilt No. 4 machine at St. Anne's has been limited to 1400 fpm, because of dryer limitation, but the dryer section will be increased in the next 12 months. Folding properties of Inverform production, asserted Mr. Lawrence, are good and there is amazing bond. Solids content of the sheet can be varied from 11% to 18%, says Mr. Lawrence, in contrast to a 12% limitation on a normal cylinder machine.

### Plastic wires are Needed

St. Anne's men studied the secondary headboxes in use in the U.S. for 9 pt. board, he said, "but we wanted a board of layers of high wetness with groundwood back. We now use a low pressure air sweep on all four plys."

New Inverform machines now being built for different parts of the world will have a simpler arrangement for handling of wires, Mr. Lawrence said, and would include an automatic braising device.

Plastic wires are being tested and these are showing increased wire life in the range of 600%. Manufacturers of wires are cooperating. Plastic wires will be better for the Inverform, predicted Mr. Lawrence.

In development work, St. Anne's made some 8,000 samples and there were 700 distinct runs, he said. A 1 to 1.8% flowbox consistency was used. Products range from white-lined chipboard to boards for coating.

"Above 2,500 feet per minute we are entering an unknown area for Fourdriniers and many longheld theories will have to be reexamined," said Mr. Lawrence.

It was admitted in reply to a question that wire costs are not entirely satisfactory but the wire makers are being pressed to get on with plastic wire. Top wire life ranges from 3 weeks to one month and lower is in range of a month.

## Differences Between Sulfite and Kraft: Will One Pulping Method Have to Go?

### Mystery: Why sulfite bleaches more readily

"The industry must decide whether it can continue sulfite or must abandon it for kraft." That's what one international pulping authority asserted at the CPPA's Technical Section's symposium in Montreal on the fundamental chemical differences between sulfite and kraft pulps. His remarks are all the more significant in view of the fact that Canada has not built any new sulfite mills in the last ten years. The U.S.A. has built three mills (two in Alaska), all with chemical recoveries, and one modified sulfite pulp mill using the Stora Kopparberg two-stage cook process is now under way for Canada.

Of Canada's 130 pulp mills, 45 are sulfite, 19 are kraft. In the past ten years, kraft pulp production has tripled, sulfite has had a nominal increase. Pulp mills already committed to sulfite, such as newsprint mills, may find it impractical to convert to kraft, but in the past year, one U.S. soda pulp mill has added kraft, a Canadian soda mill likewise and a U.S. soda mill is currently switching to kraft. But Newsprint mills may find that instead of using a furnish of 80% groundwood/20% sulfite, with kraft they can use 85% groundwood.

CPPA's all-day symposium on the chemical differences in these two pulps was definitely one of the high points of the annual meeting. As the afternoon panel of research experts took their places, there was an air of excitement in the room. The audience knew that with Dr. W. Howard Rapson, professor of chemical engineering at the U. of Toronto, as chairman, they were due for some top rate discussions. They were not disappointed. At the conclusion, one pulping expert said that the ideas that had been generated would touch off discussions in international pulping circles for years to come.

Basically, the discussion centered on the differences in chemical properties between sulfite and kraft pulps, and why. The big mystery: Why is sulfite pulp more readily bleached and more easily refined with less power than kraft. There is considerable speculation on this subject. Some say it boils down to the amount of residual lignin in kraft pulp.

In sulfite pulp, the chemical attack is on primary and secondary walls and on the intermicellar. The primary wall and intermicellar have heavy lignin content. In kraft pulping, the attack is topochemical with penetration being partial. So, in the bleaching stages, with less residual lignin to be removed in sulfite pulp, the chlorine demand is low. In bleaching kraft pulp, the bleaching must be done in stages to penetrate the fiber and the reason kraft is so hard to bleach is that it takes time to penetrate the fiber.

The discussion also swung to the effect of mechanical treatment on sulfite and kraft pulps. Chipping has a very severe effect upon the strength of pulp, especially sulfite pulp.

### Deckles Used to Be Dickles in Early Days!

In his Stadler Memorial Lecture, at the Canadian technical meetings in Montreal, Leslie A. Lawrence of St. Anne's Board Mill Co., Bristol, Eng., said research in London archives revealed that the early name for "deckle" probably was "dickle."

Probably the first use of either word was in Dickinson and Gamble documents of 1807 found in Chancery Lane, London. They wrote about "dickles."

**PANEL PROBES fundamental differences between sulfite and kraft pulps. From left are Warren Beazley, Industrial Cellulose Research Ltd., Dr. J. H. Kalisch, Rayonier, Inc., Dr. George H. Tomlinson II, Howard Smith Paper Mills Ltd., Dr. W. Howard Rapson, U. of Toronto, J. S. Cheriton, Abitibi Power & Paper Co. Ltd., T. N. Kleinert, Pulp & Paper Research Institute of Canada, Dr. Kenneth C. Logan, Anglo Paper Products Ltd., and H. D. Paavila, The KVP Co. Ltd.**

# Review of Kraft-Sulfite Pulping Highlights

**By Jean L. Chollet, in charge of Pulping Research, Anglo Paper Products, Ltd.**

In the last 30 years a vast quantity of experimental data has been accumulated in attempting to elucidate the reason for the important differences in the physical properties and chemical composition of kraft and sulfite fibers and the properties of the papers made from these fibers. It is well known that sulfite pulps are easier to refine to maximum strength than kraft pulps. They also have a higher initial brightness and are easier to bleach to high brightnesses.

Kraft pulps, however, develop much higher strength particularly burst and tear. Kraft pulps have generally a lower resin content, a higher pentosan content and a more uniform D.P. (degree of polymerization) distribution than sulfite pulps. At the same lignin content, sulfite pulps are usually obtained in higher yields and are generally more suitable for dissolving grades than normal kraft pulps.

The differences between kraft and sulfite pulps are obviously the direct result of the different action of the kraft and sulfite cooking liquors on the constitutents of the wood fibers. In their paper, Hamilton and Thompson presented experimental evidence of the different behavior of the noncellulosic carbohydrates in softwood and hardwood toward kraft and sulfite liquor. They studied the mechanism of degradation of isolated xylose-containing carbohydrates, glucomannans, and galactoglucomannans under the conditions existing in the kraft and sulfite cooks and showed that the degradation mechanism is characterized by both side branch cleavage and main chain shortening.

In xylose-containing hemicelluloses, the arabinose side chains were rapidly cleaved by acid hydrolysis while the glucuronic branches were completely removed by kraft pulping at temperatures above 155°C. The relative resistance of glucomannans toward acid and alkaline hydrolysis was shown and explains the presence of appreciable quantities of mannose in the hydrolyzate of kraft and sulfite pulps. On the other hand, galactoglucomannans which are not found in sulfite pulp were shown to be very susceptible to acid degradation.

Under a specially designed digester sampler, Kalisch and Beazley studied in some detail the kraft and sulfite processes. They presented comparative data showing variations in pulp composition and characteristics throughout the cooking cycle. Their work indicated the existence of two degradation levels. The first one at about 46% total yield where a pronounced increase in the rate of D.P. reduction is evident and a second one at 37% yield where the rate of carbohydrate removal becomes very marked, particularly in the sulfite cook.

Down to about 50% yield only a small amount of pentosans was removed during the kraft cook but the rate of mannan removal was somewhat higher. Both pentosans and mannan were generally removed at a higher rate during the sulfite cook although at very low yield the rate of hemicellulose degradation became very rapid during both kraft and sulfite pulping.

Rapson and Anderson studied extensively the differences in bleaching characteristics between kraft and sulfite pulps in multistage sequences. Their work indicated that although kraft pulp is more difficult to bleach than sulfite pulp, both appear to consume chlorine at approximately the same rate and the difference in bleachability was attributed to a difference in the accessibility of the lignin.

The removal of chloro-lignin by caustic extraction was also studied. For sulfite pulp the rate of lignin removal appeared to be almost independent of temperature and caustic concentration within a wide range of conditions while higher extraction temperatures and caustic concentration improved very significantly the removal of chlorinated lignin from kraft pulp.

Three-stage bleaching using chlorine dioxide in the last stage gave a brightness of 88-89% G.E. with sulfite and only about 70% G.E. with kraft. High brightness and stability were obtained with kraft using a six-stage sequence including both chlorine dioxide and peroxide ($Cl_2$–NaOH–$ClO_2$–NaOH–$ClO_2$–$H_2O_2$). The introduction of a hypochlorite stage after the first extraction also improved the brightness. In the case of sulfite, markedly improved stability was achieved by extraction of the resin after bleaching. The improvement was less pronounced with kraft pulps which have a much lower resin content.

In reviewing the work published in the literature on the fundamental differences between kraft and sulfite pulps, Tomlinson suggested that the lower strength of the sulfite pulps might be due to the presence of voids or discontinuities in the arrangement of the cellulose chains in the fiber wall. These discontinuities could possibly be related to hemicellulose degradation such as described by Hamilton and Thompson.

*Continued on next page*

**DR. HANS W. GIERTZ, Technical U. of Norway, discusses some of his theories on differences between sulfite and kraft pulps. After the CPPA meetings, Dr. Giertz visited the Price & Pierce offices in New York and toured some U.S.A. mills.**

## . . . CPPA AT MONTREAL

Dr. T. R. Kleinert indicated that the difference in bleachability between kraft and sulfite could possibly be explained by the difference in the chemical nature of the lignin in these pulps. This would present an alternative to the hypothesis that the lignin in kraft pulp is not as easily accessible to the bleaching chemical as in sulfite pulp or that it may exist in a different physical form.

The difference in response to chipper damage for sulfite and kraft pulps was discussed by Dr. Kenneth C. Logan. He mentioned the early studies of Yorston and Dadswell and the more recent work of Stone and Nickerson. Acid susceptibility as defined by Yorston has been attributed to mechanical deformations of the fibers visible in the microscope under polarized light and identified as "slip planes." The nature of the "slip planes" is still unknown and more research work will be required to explain the difference in the behavior of damaged wood in acid or alkaline liquors.

## Report Indicates Sulzer Unit Saves Power

Although the Sulzer vacuum system is used in European mills, the first application in North America was made at the Eddy Co.'s. Hull, Que. mill. T. Foulkes, chief plant engineer, reported on the success of this installation (see PULP & PAPER pictures, report, Aug. 1959 issue).

Vacuum requirements of the Beloit 149-in. are being satisfactorily met, Mr. Foulkes asserted, by the blower installation. The comparatively flat pressure characteristics of the centrifugal compressor have given power savings on the multi-grade tissue machine. A feature is that heat of compression is used to assist in drying of the paper.

Eddy Co. can operate both units in parallel on towelling grades and operate one unit alone to furnish requirements for lighter weight tissues. Immediate power savings accrue from being able to shut one machine down. Also, one unit can be removed from service for maintenance and the other unit is still able to operate the paper machine on lighter weight tissues.

The Sulzer blower is a multi-stage centrifugal compressor that removes air from a confined space such as a suction box, thus creating a lower pressure than atmospheric. The moisture laden air removed from the paper machine is fed through suitable separators to the blower intake. Air is then compressed through multiple stages of the blower until it is discharged at atmospheric pressure. Each casing and impeller of the blower can handle the same volume of air in each stage. As the air is compressed, and occupies less space, it is possible to feed additional air at lower pressure into succeeding stages. This gives the blower a multiple rating. This feature, cited Mr. Foulkes, gives greater flexibility.

## Checklist: White Pigments and Paperboard

### How to select white pigments as reported by William R. Willetts, Asst. Mgr., Titanium Pigment Technical Service Laboratories

1. Uniformity; only a uniform component can give a uniform result.

2. High brightness, whiteness and hiding power to produce optimum appearance. The high hiding power resulting from high refractive index will result in maintenance of good color and appearance even when the sheet is waxed or oiled.

3. Freedom from grit, dirt or other extraneous material for lower abrasion and therefore less wear on slitters, cutters, converting equipment and printing plates.

4. Suitable affinity for ink to affect desired end result, either good ink absorption or good gloss ink hold-out.

5. Low adhesive requirements, desirable because brightness and hiding decrease with increasing adhesive and furthermore the adhesive is usually an expensive ingredient of the coating color.

6. Ability to produce gloss on calendering since such gloss is usually desirable.

7. Low water requirements since high solids fluid slurries which may be used to feed into the heater or elsewhere into the stock, or in preparing the coating, are usually desirable.

8. Ability to produce high total-solids coating colors at operable viscosities since this enables coating at high solids with less water to evaporate, higher speeds, etc.

9. Quick and easy dispersibility in water and coating vehicles for less mechanical work and power to produce suitable slurries and coating colors.

10. Chemical inertness, stability and insolubility to assure compatibility with other components of the beater furnish or coating color.

Also to be considered, added Mr. Willets, of major importance, is cost. It should be considered not merely on basis of cost/lb., but on cost required to produce required end result—a cost-quality consideration.

## Instrumentation: Preventive Maintenance

### Proof of effectiveness at Gaspesia Sulphite is big drop in service calls

**Problem:** William "Bill" W. Hall, instrument control supt., Gaspesia Sulphite Co. Ltd., Chandler, Que., explained the instrument department has responsibility for maintaining some 900 instruments in the power and steam plant, sulfite mill, screen room and pulp dryer.

**To Do:** Gaspesia wanted to set up a simple preventive maintenance program to provide a minimum of instrument downtime using a Kardex system and placing responsibility upon the instrument mechanic. This obviates need for extra staff, makes the mechanic more conscientious and gives him better job interest.

**Results:** Service calls have dropped from 100/month to 80. There are other benefits of the record system. Information about any instrument is readily accessible by reference to the Kardex file or maintenance record file without having to go to the instrument for data or rely on memory of the man who has serviced the instrument for performance information.

Two types of cards are used: One records data on a whole instrument system; the other records changes of components or parts so that an up-to-date picture of all systems is readily available. There is also a file for instruments out of service.

To standardize maintenance checks and to insure thorough checking, Gaspesia has an instrument preventive maintenance standard practice procedure which is a description of the checks to be made.

## New CPPA Officers Elected at Montreal

CURRIE

BENNETT

George S. Currie, president, Bowater Corp. of North America Ltd. is new chairman of the executive board, Canadian Pulp and Paper Assn. He succeeds Vernon E. Johnson, president, Canadian International Paper Co., who becomes vice chairman. Also appointed vice chairman is G. M. Hobard, president, Consolidated Paper Corp.

W. T. Bennett, vice president, engineering, Canadian International Paper Co. is elected chairman of the Technical Section, CPPA. He succeeds Jack McK. Limerick, director of research and development, Bathurst Power and Paper Co. Elected vice chairman is E. L. Neal, president, Gaspesia Sulphite Co.

Elected to the Technical Section Council for three year terms are J. Ashby, executive vice president, Westminster Paper Co., G. C. Brown, vice president and general manager, Price Brothers & Co. and C. J. Jeffery, vice president, manufacturing, The Great Lakes Paper Co.

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**At the Montreal meetings for PULP & PAPER were Albert W. Wilson, editor; Maurice R. Castagne, editor for Eastern U.S. and Canada, and Ralph R. David, sales manager.**

# The New Pulp Prices

### Brightness and fiber species appear to be basis for new prices of sulfite, kraft pulps

Just when the industry thought it had weathered the overcapacity storm without any major price changes, recent moves by some market pulp producers have introduced a new element of pulp pricing.

For a long time, wood species have been recognized in price differentials. Now for the first time, after considerable hesitation and jockeying on the part of sulfite and kraft producers, the combination of brightness and fiber species is considered in the price structure of pulps.

Here is how pulp prices shape up at this date:

**BLEACHED KRAFT SOFTWOOD**

Western, Northern and Scandinavian pulps 90 GE brightness plus: $160 ton. Southern kraft and all other wood species with a lower brightness are $157 to $152 ton, depending on species and brightness. The $152 quotation is a $5 drop from previous prices, but the $160 and $157 pulps are virtually unchanged.

**BLEACHED KRAFT HARDWOODS**

Unchanged at $152 to $140 ton, with brightness being the determining factor.

**BLEACHED SULFITE**

90 GE brightness plus are unchanged at $155 ton. Lower brightnesses range from $153 to $150 ton. This is a drop of $2 to $5 ton.

**SODA PULPS**

Unchanged at $150 to $147 ton.

**SEMI-BLEACHED KRAFT**

Unchanged at $140 ton.

**UNBLEACHED KRAFT**

Unchanged at $125 ton.

**UNBLEACHED SULFITE**

Unchanged at $135 ton.

One Southern company made an earlier-than-usual announcement of second quarter prices. The revision is upward.

The big change in the price structure of market pulps is explained this way. The first move was by one company, long considered a foe of price cutting, which contended difficulties in selling different qualities forced its hand. Industry observers say the company had no intention of affecting the pulp price structure. But it found itself in this spot: It had one mill making chlorine dioxide bleached pulps; another mill producing a lower brightness pulp due to a lack of chlorine dioxide bleaching facilities. It had difficulty trying to sell both brightnesses at the same price level. Once the move was made, it was followed by several other companies, and the rest of the industry had to follow suit or try to sell its lower brightness pulps at the "premium" price.

There are mixed emotions as to the wisdom of the move. Some agree; others do not. Some question not the wisdom of the move but the timing, saying it came at a moment when market pulp was picking up and some stability seemed to be settling in the industry.

## Association Leaders See Records in 1960

Spokesman for the paper and paperboard industry forsee a prosperous sales year in 1960.

Surveyed recently by *American Paper Merchant*, top-level representatives of major industry associations predict increases in production and distribution for practically every facet of paper and paperboard manufacture.

Typical reactions:

**John Richey**, executive sec.-treas., Paper & Twine Assn.: "The paper business at wholesale in the United States in 1960 should be from 5 to 10% ahead of 1959."

**Robert E. O'Connor,** executive sec., APPA: "The gain in output of paper and paperboard from 1959 to 1960 will probably match the gain shown for the total economy—about 3%. . . . This would result in a new high of 35,000,000 tons."

**John M. Cowan,** managing director, National Flexible Packaging Assn., "Estimates of 1959 sales for converted flexible packaging products are at the half-billion-dollar level, with a probable 10% gain during 1960."

**Dernell Every**, sec., Kraft Paper Assn. Inc.: " . . . Kraft paper capacity will be increased in 1960 by three new paper machines. Only a 1 or 2% increase in kraft paper demand is estimated."

**Robert E. Canfield,** Printing Paper Manufacturers Assn. Inc.: "It is probable that printing paper tonnage shipped will range from 3 to 5% higher in 1960 than in 1959."

AT KALAMAZOO: SCIENTIFIC ADVANCE REPORTS

# Mechanical Treatment of Fibers

## . . . is discussed at Fourth Western Michigan Pulp & Paper Conference.

## Big turnout hears European progress discussed by editor.

By DON W. ZEIGLER
Midwest Editor, PULP & PAPER

● Old and new were blended perfectly at Kalamazoo, Mich., January 21. The Fourth Annual Pulp & Paper Conference at Western Michigan Univ. devoted itself to the newest departures in mechanical treatment of fibers. That evening Kalamazoo Valley TAPPI and Michigan PIMA gathered for their 25th annual joint dinner meeting. The scientific future met the nostalgic past.

Close scrutiny was given "one of the most inexact phases of the paper industry" as more than 200 mill superintendents, managers and technical and quality control directors met at the ultramodern auditorium of the Dept. of Paper Technology on the Western Michigan campus.

"The mechanical beating and refining of papermaking fibers has been practiced for centuries," said Raymond L. Janes in his introductory remarks. "There is considerable work that should be done toward improving the surprising inefficiency of applied horsepower utilization of the present beating and refining operations. In spite of this inefficiency, mechanical treatment of fibers remains the most economical manner to prepare fibers for paper manufacture. In recent years the field of beater adhesives has grown to the point where now many mills—I am afraid—use them as a 'crutch' to compensate for inadequate or poorly controlled mechanical treatment of fibers. . . . Beater adhesives have a definite place in the paper industry, but they should be used to *supplement* rather than to replace proper mechanical treatment of fibers."

Thus giving background and meaning to the important conference, Professor Janes outlined the purpose of the gathering: to be concerned with some of the mechanical aspects of stock preparation—including the areas of fundamental concepts, evaluation of equipment and preparation of fibers. The kinds of papers principally involved were glassine and greaseproof, book and re-used fiber. The speaker served as meeting chairman; he is asst. professor of paper technology at Western Michigan.

Laying a basis for the discussion to follow, Dr. J. A. Van den Akker pointed to the effects of mechanical treatment on the fibers as being "of greatest interest" to the industry.

These, he said, are "usually classified as: (1) A loosening of the structure of the fiber wall—not necessarily a weakening, with consequent increase in wet flexibility and swelling; (2) fibrillation, with removal of the primary wall and production of free and partially free fibrils of size ranging from microscopic to about 50A, and (3) cutting". Dr. Van den Akker is senior research associate in the Physics Groups, Institute of Paper Chemistry, Appleton, Wis.

"Associated with these effects on the fibers," he continued, "are sheet properties of interest. Increased flexibility and conformability of the fibers result in more extensive interfiber bonding. Extent and nature of the fibrils partially disrupted from the fibers play a roll in the quality and strength of the interfiber bonds. Number and quality of these bonds have profound influences on the physical and optical properties of the final sheet. While the web is still in the formative stage, the specific surface of the system of fibers and fibrils is believed to have a major influence on the retention and efforts of such additives as dyes, fillers, sizing agents, bonding agents, etc."

Improved refining efficiency, Dr. Van den Akker concluded, must be the constant aim of research. He estimated—for idealized mechanisms—the energy requirements for loosening the fiber wall structure, fiberillation and cutting. "The sum of these estimates is so much smaller than actual energy requirement observed in mills that substantial 'driving force' exists for thorough and well-directed research."

## Higher Machine Speed for Greaseproof

### Needed: new type of pulp, new beating methods or new means of sheet formation

Production of a dense sheet having greaseproof qualities at substantially higher paper machine speeds should be a basic goal for the industry, declared Dr. William R. Haselton, vice pres. and gen. mgr., Rhinelander Paper Co., Rhinelander, Wis.

What is sorely needed for this achievement, he said, is a new type of pulp; a new method of beating or refining, or a new means of sheet formation. "In beating and refining for glassine and greaseproof production", Dr. Haselton pointed out, "the goal is extensive fibrillation of the fibers."

Explaining that glassine and greaseproof are unique in that pulp hydration is continued to essentially the maximum extent, the speaker declared that therefore beating and refining for these grades should be analyzed "to provide interesting insight into pulp refining in general."

Continuing: " . . . It is to the property of imperviousness to air and oil (resulting from an almost continuously-bonded film of cellulose) that glassine and greaseproof papers owe their commercially valuable properties of grease resistance, transparency, smooth fiber-free surface, lacquer and wax hold-out, gas and flavor barrier characteristics and gloss. . . . While a portion of the bonding in glassine results from the supercalendering operation, the primary means whereby internal and external fiber bonding is increased to the proper degree is through beating and

**Nostalgia at Kalamazoo**

With the 25th annual joint meeting of Kalamazoo Valley TAPPI and Michigan PIMA (formerly the superintendents), the banquet hall of the Hotel Harris was filled with the Auld Lang Syne spirit.

Albert W. Wilson, editor of PULP & PAPER, presents a first-hand report on the almost lachrymose scene. Turn to the Last Word page.

refining ahead of the paper machine."

Economical production, Dr. Haselton continued, requires the use of pulps that can be refined to an extreme degree without the need for large quantities of power. Of extreme importance is that sufficient amounts of the original hemicellulose remain in the fiber following pulping to facilitate rapid hydration.

"That the really important thing is the type and quantity of retained hemicelluloses rather than the species of wood used was demonstrated several years ago at Rhinelander when a substantial quantity of commercial, glassine paper was produced using pine sulfite pulp cooked by the two-stage Stora Kopparberg process.

". . . Even a glassine-grade Mitscherlich can be rendered unsatisfactory from a refining power or machine speed standpoint if dried to moisture contents common for market pulps. . . . Generally, while some kraft pulp is included in certain grades of glassine and greaseproof paper (to increase tearing strength), those properties that distinguish glassine and greaseproof from other grades evolve primarily from the ability of properly cooked sulfite or semi-chemical fibers to hydrate readily and to bond quite completely both internally and externally."

Commenting that other types of paper generally require less power input since they are usually made from stock having an appreciably higher freeness, Dr. Haselton gave the following horse-power-hours per ton figures:

| | |
|---|---|
| Glassine and Greaseproof | 600-1,200 |
| Multiwall Kraft | 200-600 |
| Bond and Envelope | 300-600 |
| Newsprint | 30-50 |
| Publication | 100-500 |
| Cigarette | 600-1,000 |

From a quality standpoint, Dr. Haselton concluded, "it appears to make little difference whether beaters are used for a portion of the hydration except where high-transparency greaseproof and glassine grades are involved. Here, beating prior to refining does seem to improve transparency and to a very slight extent the tearing strength of the finished product."

**EVALUATION OF REFINER PERFORMANCE brought to a close the Fourth Annual Pulp & Paper Conference at Western Michigan as experts discussed the subject and answered questions from the audience. Left to right: Dr. J. A. Van den Akker, Institute of Paper Chemistry; A. Tom Luey, Boxboard Research & Development Assn.; Dr. William R. Haselton, Rhinelander Paper Co., Dr. John R. Fanselow, associate professor, Western Michigan. Standing: Dr. Robert W. Hisey, S. D. Warren Co., panel chairman.**

## Needed: Short Fibers, High Strength

### By book paper manufacturers as quality rises, fast presses increase

Problems faced by book paper manufacturers have been accentuated by rising levels of quality accompanied by a trend toward large fast presses (especially offset) with severe strength requirements. This has led to the necessity of using large amounts of short-fiber pulps (for quality) while maintaining strength.

At S. D. Warren Co., Cumberland, Maine, this has been done by prerefining hardwood soda pulp in refiners specifically designed for the purpose, as well as by automating stock preparation for uniformity and cost advantages. The speaker was Dr. Robert W. Hisey, S. D. Warren technical director, who commented, "this pulp does not form 'fiberages' well on bar-to-bar equipment."

"For this reason," he continued, "not only is the original selection of equipment critical, but the maintenance of tackle in good shape is much more important than in long-fiber refining. . . . By the same token, slight variations in pulping and bleaching have been found to exert an influence of similar magnitude on the refining efficency of these relatively high efficiency tackles."

Book paper stock preparation problems, Dr. Hisey explained, arise from contradictory use requirements. On the one hand, these grades should have high finish, bulk, brightness, opacity and filler content; while on the other they should have good tear, fold, stiffness and internal bonding.

Defibering and stock cleaning are items of primary importance in processing reused fibers for cylinder machines. This according to A. Tom Luey, exec. secretary, Boxboard Research & Development Assn.

"Mechanical treatment of the pulp to effect hydration and adjust fiber length," he said, "was carried out in the production of the primary sheet, which has now become our raw material. Further mechanical treatment will generally result in reduced strength and stiffness of the paperboard and should be kept to the minimum necessary to adjust drainage rates required for machine operation and ply bonding."

Granting that in the pulp and paper industry it is rarely possible to make a general statement, Mr. Luey explained "In order to define the limits of this discussion, we shall consider only the processing of news, mixed and corrugated wastes for filler stock on cylinder machines."

Continuing: ". . . It is important to recognize the basic conditions required for defiberizing paper prior to considering the various means used to effect the end results. . . . As the undefibered specimen becomes smaller, it is increasingly difficult for one end to be caught on an impeller. As a result, the forces now required for defibering must be supplied by some other means."

Mr. Luey declared that, essentially, complete defibering can be obtained in batch pulpers of various designs. However, the continuous pulper with a ragger and junior is considered a necessity in a modern filler system, and discharged stock will normally be about 50% defibered. Use of jordans to complete defibering is considered undesirable, he said, and various

## . . . KALAMAZOO

pieces of secondary defibering equipment in the stock system is directly after the continuous pulper.

All the three basic and three secondary methods of stock cleaning in use today (except the dispersion of asphalt and waxlike material) are removal techniques and have one thing in common: the amount of objectionable material removed will be substantially affected by operating conditions such as stock consistency and tonnage load.

Although dry cleaning is usually skipped over in discussions of stock cleaning, Mr. Luey said, it is of considerable importance as it affects the load placed on beater room equipment.

The speaker discussed centrifugal cleaners (low- and high-gravity) and coarse and fine screens—their proper operation and location.

His talk was followed by a panel discussion in which the principal speakers discussed, "Approaches to the Comparative Evaluation of Refiner Performance." Moderator was Dr. Hisey.

At the jam-packed banquet at Kalamazoo's Hotel Harris following the technical program at Western Michigan, more than 500 men and women celebrated the Silver Anniversary of the Papermakers' Get-Together. (For reminiscing, see Editor Wilson's article on the Last Word Page, this issue.)

Principal speaker was Edward McFaul, Chicago management consultant and professor, who warned of the careless use of "dynamite" words in communication in his talk, "How to Keep Your Foot Out of Your Mouth."

Brief histories of the local TAPPI and PIMA organizations were presented by R. G. Macdonald, asst. to the president of national TAPPI, and Harry Weston, secretary-treasurer of national PIMA.

### Paper Technology Election

Bert H. Cooper, retired vice pres. of Kalamazoo Paper Co., was reelected chairman of the advisory committee for paper technology at Western Michigan Univ. William A. Kirkpatrick, president of Kalamazoo Paper Box Co., was elected vice chairman; and Dr. Alfred H. Nadelman, head of the WMU paper technology department, continues as secretary.

Two retiring committee members, L. D. Nicolson, vice pres. of Hamilton Paper Co., Plainwell, and A. L. Sherwood, vice pres. of KVP Sutherland Paper Co., were presented certificates of appreciation.

Press of business was the reason given for resignations of R. T. Trelfa, Perkins Goodwin Co., and Daniel T. Quirk, Peninsular Paper Co., Ypsilanti.

## Russian Paper

### Still has far to go to catch up with U.S., says P&P editor

Russian drives to improve and expand papermaking are closing gaps in world production but it would take several years to catch up with per capita consumption in the U.S.A., according to Albert W. Wilson, editor of PULP & PAPER and PULP & PAPER INTERNATIONAL, who was speaker at the noon luncheon at the Pulp and Paper Conference in Kalamazoo.

An extended tour of European pulp and paper centers in 13 countries was the subject of his address before more than 200 at the banquet held in the Student Center on the Western Michigan campus. He described visits to a Russian mill, a research center and the State Planning Commission.

The U.S.S.R., he said, is now making only about one-tenth as much paper as the United States, but Russian officials plan steady annual increases of 9-10%. Along with this, the industry is constantly ordering new equipment—principally from European suppliers, while at the same time making extensive plans for construction of its own pulp and paper machinery manufacturing centers.

**EUROPEAN MARKET POTENTIAL GREAT, said Albert W. Wilson, editor of PULP & PAPER and PULP & PAPER INTERNATIONAL, as he addressed the luncheon of the Pulp & Paper Conference.**

Elsewhere in Europe, Mr. Wilson found significant progress being made and increasing flexibility in specialty grade operations—although tonnages lag behind the U.S. He predicted that many European mills (less than 25 tons per week) might well perish in the growing economy of the Common Market.

He termed the European market potential as great, although packaging on the Continent is yet in its infancy, with many food items still sold unwrapped. Mr. Wilson anticipates the continuation of the trend of major U. S. mills affiliating with existing European firms.

Nadelman Luey Van den Akker Seibert Wilson Cooper

**RUSSIA'S PLACE IN WORLD PAPERMAKING was the topic discussed at the luncheon session by Albert W. Wilson, editor of PULP & PAPER and PULP & PAPER INTERNATIONAL. Head table luminaries included: Dr. Alfred H. Nadelman, head of the Dept. of Paper Technology, Western Michigan; A. Tom Luey, Boxboard Research & Development Assn.; Dr. J. A. Van den Akker, Institute of Paper Chemistry; Dr. Russell H. Seibert, vice pres. for academic affairs, Western Michigan; Mr. Wilson, and Bert H. Cooper, recently retired as vice pres. of Kalamazoo Paper Co., who has been reelected chairman of the school's advisory committee on paper technology.**

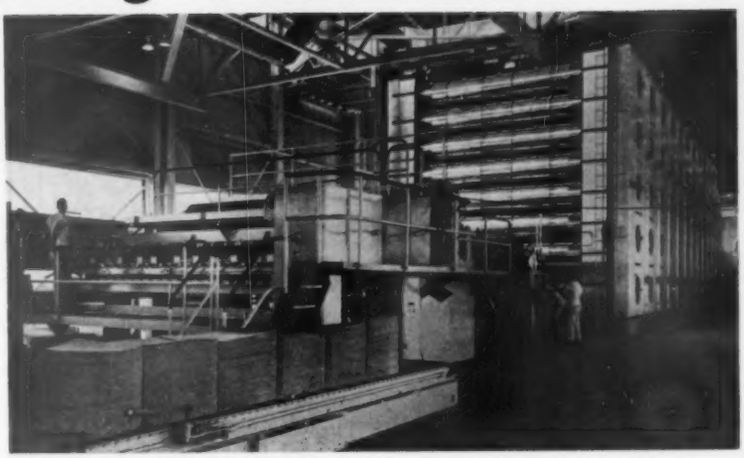
# Four-Man Finishing at Bowaters

—Catawba, S. C.

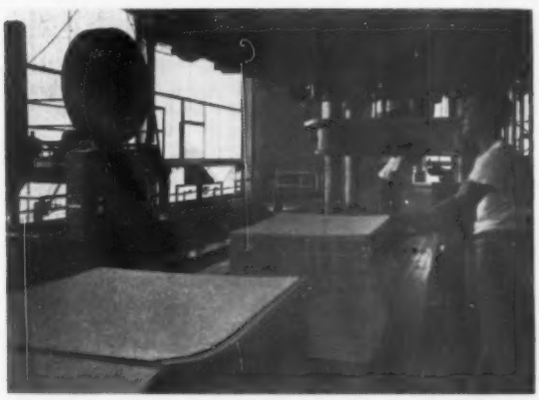
• One of the most exciting features of the new highly-automated Bowaters Carolina Corp. pulp mill (described in detail in the November 1959 PULP & PAPER, page 76) is its simplified two-man wire-tying and baling operation.

This finishing function is located directly behind the cutter and layboy, completing a straight-line design from dryer through cutter and layboy; press; wire-tying and baling, and delivery to the warehouse.

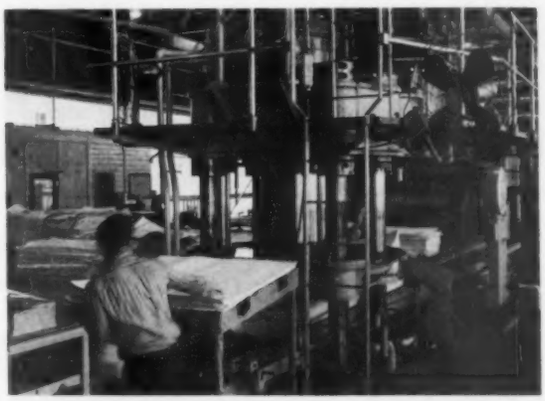
In a special feature, PULP & PAPER brings its readers a photographic flow sheet of this unique department, showing how the Ovalstrapping wire-tying (incorrectly identified in November) and baling system operates with a minimum of manpower.



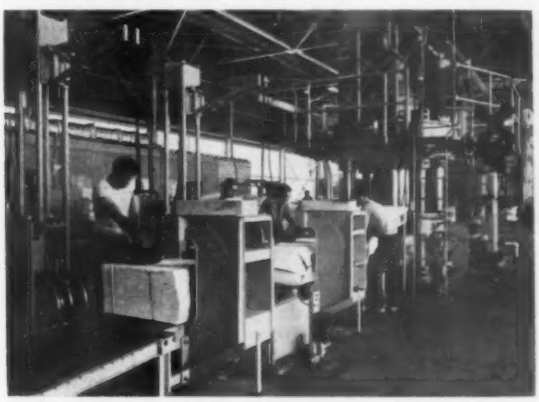
**STREAMING FROM CUTTER, pulp from new type airborne dryer heads toward finishing department located directly in line with dryer and layboy.**



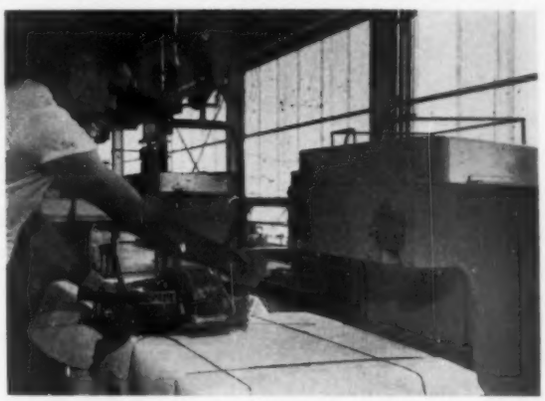
**FROM THE LAMB-GRAYS HARBOR CUTTER and layboy, 26- × 32-in. sheets go in 450-lb stacks to weighing station and from there to 800-psi Washington Iron Works press that compresses them into tight bundles.**



**ACTION AT BIG PRESS seen in special PULP & PAPER picture. From press, bundles are delivered to the full power-assist wire-tying machines by Ovalstrapping. Only four men are used for weighing, pressing, tying.**



**OBSERVED BY TWO MEN from weighing and pressing section, tying dept. duct uses Ovalstrapping power tools with twin-head powerizing wire-feeding units to wrap pulp. Ovalstrapping also makes fully automatic equipment, but full power-assist was deemed best for this operation.**



**MOVING INTO SECOND TYING STATION, stack is shown in this closeup. Between first tying station and this second station, an automatic turntable spins bundle 90 degrees. Two Ovalstraps are provided at first station, then cross strapping is applied here. Next step is lowerator.**

# Improving Effluent Disposal

## Where lagooning is limited, and waters allow, a separation of BOD constituents can be significant production factor

BY LOUIS H. BLACKERBY
Western Editor, PULP & PAPER

● Separating the high BOD constituents of mill effluents from those with low BOD rating can be significant for mills where lagooning capacities are not limited and receiving waters subject to low tolerance. At Crown Zellerbach Corp's. West Linn, Ore., mill the high BOD components of spent sulfite liquor are impounded and the remainder, of low concentration, sewered. The system utilizes temperatures of the spent liquor coming from blowpits as the indexing factor for sorting low and high concentrations.

Predicated on relations existing between oxygen demand, percent solids and temperature of spent liquor coming from blowpits, effluent of temperatures above a set point is automatically diverted for impoundment, the low-temperature, low BOD constituents released. The temperature of spent liquor draining from the blowpit effectively functions as a workable index of BOD content. Because the wash water is cooler than the liquor and pulp, decreasing temperatures at the drain indicate progressing degree of washing and, consequently, diminishing concentration of spent liquor.

As pointed out by E. A. Woodworth, CZ West Linn instrument engr. who presented a paper on this project at Pacific TAPPI's recent annual engineering meeting in Longview, Wash., drainage from blowpits could be segregated into its weak and strong constituents on a straight time-cycle basis if blowpits were emptied after each digester blow. He said that type of system is not the solution at West Linn and other mills where "it's necessary ' at times to use individual digester blowpits as additional storage."

### In Operation Since 1952

Located at the head of the lower Willamette River, Crown Z's West Linn plant has been lagooning spent liquor during low stream-flow periods since 1952. The Oregon State Sanitary Authority aims to maintain as high dissolved oxygen content as feasible in this area of the river. To achieve this, requirements have been specified for individual mills. These schedules, based on volume of flow (at an up-river point) during low-flow periods, denote amounts the mills are to reduce BOD of their total discharge. Stipulations for the West Linn mill range from a 55% BOD reduction at a river flow of 8,000 cfps to 79% reduction at 3,500 cfps—the river volume has not diminished to this low flow rate.

The mill's 19-acre, 66 million gal. lagoon capacity is sufficient to meet these demands during low river-flow periods providing the BOD concentrates are appropriately segregated. This leaves a significant amount of low BOD effluent acceptable for immediate disposal.

In that spent sulfite liquor represents 70 to 90% of the mill's entire effluent BOD load, the plant requirements could be met by sufficient impoundment from that one source. The problem was to achieve this without exceeding lagoon capacity. This, in effect, meant installing a system for high BOD concentration per gallon of lagooned effluent.

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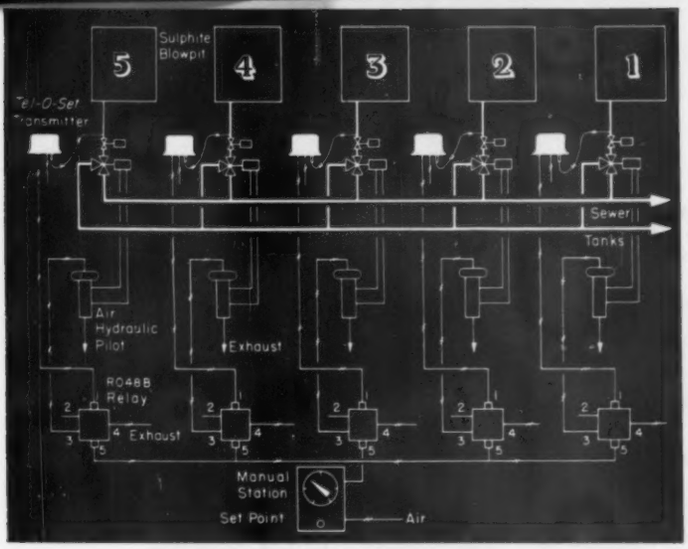
## These Speakers Presented Effective Solutions to Production Problems at Pacific TAPPI Engineering Meeting

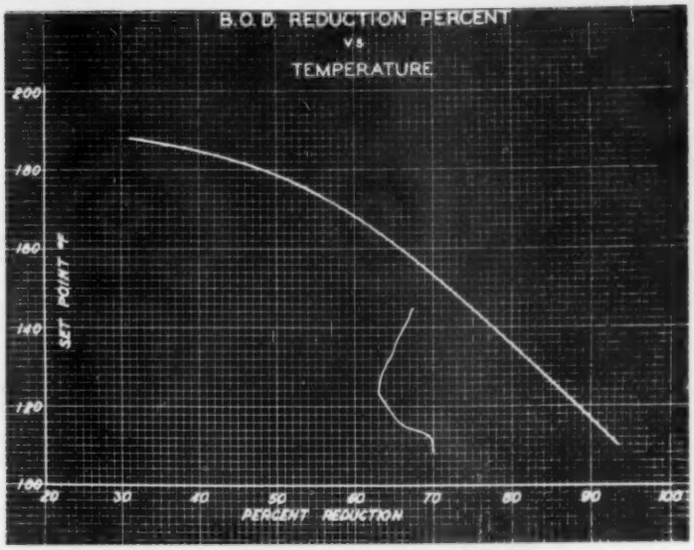
(Front row) Gibson . . . Robertson . . . Decker

(Back row) Woodworth . . . Linkhart . . . Tudder

B. W. Gibson, chief design engr. of Longview Fibre Co. presided as moderator; George Robertson, Simpson Paper Co., evaluated results from rebuild of No. 3 machine; Jack Decker, chief chemist, Vancouver, Wash. Div. Columbia River Paper Co., reported how automatic starch diluting system operates; E. A. Woodworth, instrument engr. at Crown Z West Linn Div., described system for separating high-low BOD effluent concentrations; Robert Linkhart, chief chemist, and Tom Tudder, asst. pulp mill supt., Potlatch Forest Inc., described operation of continuous digester at their Lewiston, Ida. mill.




**SEGREGATION BY TEMPERATURE. For diverting spent liquor at CZ West Linn mill—discharging low BOD portions to sewer, high BOD effluents to tanks for pumping to lagoon. Five blowpit drains indicated at top. Numbers on pneumatic selective relays (at bottom) denote (1) connections to Tel-O-Set transmitter, (2) air supply, (3) control air to air-hydraulic pilot, (4) exhaust, (5) air from manual set-point station.**




**GUIDE FOR OPERATING SPENT LIQUOR DIVERSION SYSTEM at CZ mill to attain specified effluent reduction at minimum gal./lb. BOD lagooned.**

### Solving the Problem

The temperature-controlled diversion system was the answer. With it in use, Mr. Woodworth says "we are able to predict and attain the desired per cent reduction (of mill effluent load) at the lowest possible gallons pumped per pound BOD lagooned."

Comparing results of lagooning in 1952 to those achieved this past season indicates the effect of the installation. Originally it required 8.0 gal. of lagooning per lb. BOD. The 1959 rate was 4.65 gal. per lb. BOD. He says the 1959 reducton "would have been much higher" except that the river's oxygen content and flow were high during one month of the period. Consequently the mill operated at a lower, allowable percentage reduction.

### How System Functions

Pneumatic temperature transmitters (Honeywell's Tel-O-Set) measure the temperature of spent liquor at the five blowpit drains. Each signal unit connects to its respective diverting relay and to a temperature recorder.

The diverting relays (Honeywell RO48B) connect with DeZurik air-hydraulic pilots which position 3-way valves controlling destination of flow from blowpit drains. The relays can compare two pneumatic signals and divert or transmit the higher or lower one. In this case they control an on-off air signal to the air-hydraulic pilots.

Each of these 5 pilots controls the position of its respective blowpit drain valve according to the relay signals received. Pressure signals at low end of the functional pressure range set 3-way valves to drain low BOD effluent to the sewer; high-range signals activate these valves to divert concentrate spent liquor to storage tanks. Effluent delivered to these tanks is pumped to the lagoon.

The temperature of spent liquor leaving the blowpits is recorded on two recorders—providing data which have been useful in checking operation of the system. Level of the storage tanks is recorded and controlled, along with recording and totalizing of flow to the lagoon, providing the additional records needed for system evaluation.

## Automatically Mixing Starch is the Key To Size Press Operation at This Mill

### Simple system to obtain desired starch mixes

How instrumentation of size press operations at Columbia River Paper Co's. Vancouver (Wash.) Division mill upped production control and versatility was reported by Jack Decker, chief chemist, at the Longview Engineering meeting. Automated mixing of starch for the size presses is the key.

The cooking procedure for modified starch consists of heating with direct steam of 190°F. followed by a 10 min. hold period. For enzyme converted starch a temperature-time cam is used which provides for temperature holding periods and ultimately reaches 205° in one hour.

Cooked starch from the mixing tank goes to two 7,000 gal. self-leveling tanks (at 1.5 lbs./gal. concentration) where temperature is maintained at 170°. From there the starch is delivered through a common line to three separate dilution systems—one for each paper machine.

Dilution is based on reproducible mixing of "specified volumes of two liquids of different, but constant, temperatures." The resultant solutions contain specified, reproducible starch concentrations. Instead of using volumetric variables as a control method, the temperature of the resultant solution proportioning index in this system.

According to Mr. Decker, "the starch, held at constant temperatures and concentration in the storage tank, is dumped through an orifice. The differential pressure is transmitted to a D/P cell which, in turn, transmits the signal to a flow recorder . . . containing an integrater that provides us with a simple means of obtaining daily starch consumption figures for the various weights and grades of paper run on each machine.

"The starch concentrate flows through a 1¼-in. stainless steel line into a 1-in. line that connects to a control valve. This valve is controlled by a level controller activated by a diaphram type transmitter located at bottom of the return tank.

"Starch passing through the control valve tangentially enters the bottom of the mixing chamber made of a 12-in. length of stainless steel pipe. The starch enters at one side of the bottom, the dilution water admitted at the other side."

He emphasized that inlets are posi-

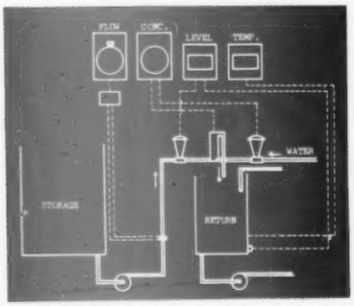
tioned so the concentrate and water mix thoroughly before arriving at top of the chamber. "Adequate mixing is critical at this point since the temperature-probe which controls concentration is located here." The solution discharges from top of the mixing chamber to the return tank.

The Columbia River mill fortunately uses well water obtained at constant year-round temperature. This 54° well water is screened and chlorinated, then flows through a control valve activated by the system's temperature-controller probe. The valve and mixing-chamber probe are connected through a temperature recorder-controller.

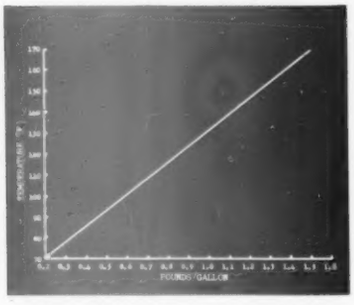
This system makes it possible to obtain starch mixes of predetermined concentration just by "setting the pointer on the resulting mix temperature" according to Mr. Decker.

Sequence for mixing starch of predetermined concentration (such as 0.8 lbs./gal.):

1. Set temperature control—at 120° for this concentration (this figure taken from concentration chart.)
2. Set return-tank level controller—which starts flow ot concentrate starch.
3. Hot concentrate contacting probe in mixing chamber causes water control valve to open.
4. Processing stabilizes at pre-set temperature in short time.
5. Flow of concentrate diminishes when mix reaches return-tank level control, this resulting in decreasing temperature at mixing chamber and, in turn, reduction of dilution water flow.




FOR AUTOMATICALLY DILUTING STARCH of constant heat and concentration to a predetermined consistency by combining with water of constant temperature.



GRAPH DEPICTS RELATION of mixing temperature to starch concentration.

## Coarse Sawdust Use at Potlatch Forests; More Continuous Digesting is Predicted

### Pandia unit cooks sawdust for use in filler stock

How the kraft mill of Potlatch Forests Inc. at Lewiston, Idaho, produces filler stock from coniferous wood was presented jointly by Robert Linkhart, chief chemist, and Tom Tudder, asst. pulp mill supt. at the Longview Engineering Conference. This stock is made from coarse sawdust, augmented by chip-screen fines and planer shavings, cooked in a Pandia continuous digester. The yield is about the same as is obtained from the plant's conventional digesters and the consumption rate of chemicals is comparable. The pulps do not differ basically in brightness but the Pandia pulp can be bleached somewhat higher.

Advantages cited from continuous cooking included (1) uniform rate of steam consumption, (2) constant discharge rate as opposed to surge flow characteristic of stationary digesters, (3) low labor cost (one man shift operates PFI's Pandia), (4) more uniform cooking.

Mr. Linkhart states, "it is felt that with continuing efforts of equipment builders and work done in mills, continuous type cooking will eventually replace stationary type digesters."

## New Summer Courses are Offered at Maine; Industry's Top Educators to Participate

### Courses designed to broaden technical and management training for industry men.

A new Summer Institute for the Pulp and Paper Industry will be held this summer at the University of Maine, at Orono, Me. The Institute is being sponsored by The University of Maine Pulp and Paper Foundation and will offer a program designed to broaden the technical and management training of people associated with the industry.

It is expected that administrators, supervisors, and key operating personnel of pulp and paper mill operations as well as persons employed by the many supplier industries will enroll.

Two programs, each lasting three weeks, are to be given. Persons may enroll for either or both of these sessions. The first session will be July 11 through 29 and the second session August 1 to 19. Courses offered during both sessions will cover technology, manufacturing, testing and management. However, the first session will stress pulping subjects and the second, paper subjects. Those attending will be housed at Hart Hall, one of the newest campus dormitories, unless they prefer to live off campus.

Requests for further information should be addressed to Prof. Lyle C. Jenness, Aubert Hall, University of Maine, Orono, Me.

Five well known educators in the field of pulp and paper technology as well as noted industrialists will join with members of the resident staff at Maine to give instruction at the Summer Institute. Visiting educators will be: Prof. John Lewis, formerly head, department of paper engineering, Lowell Technological Institute; Prof. C. Earl Libby, head pulp and paper technology, North Carolina State College; Dr. Alfred H. Nadelman, head, department of paper technology, Western Michigan University; Prof. Frederic W. O'Neil, head department of pulp and paper technology, State University of New York, College of Forestry, and Dr. Roy P. Whitney, dean, The Institute of Paper Chemistry.

Weekly lectures by some of the 28 directors of The University of Maine Pulp and Paper Foundation will be given.

# What Causes Pollution, What Doesn't

● It may well be that the oyster growers—in blaming pulp mills for their difficulties—are "biting the hand that feeds them."

Studies in the Shelton, Wash. area disclose that the oyster set declined since the only pulp mill there stopped production two years ago.

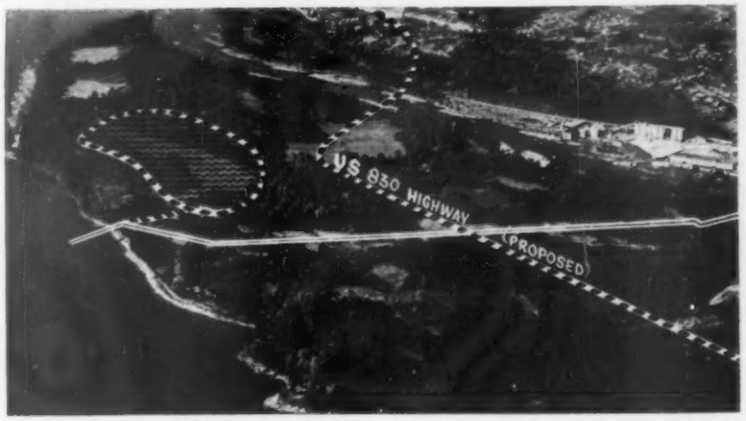
Findings of these studies were reported at the recent West Coast meeting of National Council for Stream Improvement by Jerome Stein, director of Rayonier's Hoodsport marine laboratory. Oysters growing in water containing spent sulfite liquor in concentrations up to 100 ppm. have actually been in better condition than those grown without benefit of SSL.

In reporting on marine and freshwater research work carried on by Oregon State College, at its Corvallis and Yaquina laboratories, Prof. R. E. Dimick pointed out some of the factors yet to be ascertained. He said the allowable limits of foreign materials (such as spent sulfite and kraft liquors) for oyster growing has not been satisfactorily determined.

The National Council is currently expending $240,000 per year on stream ($180,000) and air ($60,000) research. Its West Coast research expenditures run about $60,000 annually, according to George E. Miller, res. mgr. of Columbia River Paper Mills, who presided at Portland.

Isaiah Gellman, the Council's West Coast regional engineer, called attention to undertaking a project studying disposal of weak wastes from mills by irrigation and infiltration.

A recapitulation of recent accomplishments, reported by Dr. Gellman, discloses that Oregon sulfite mills reduced their solids-to-stream contributions during low-water period of 1959 to but 20% of the 1950 amount.




**OUTLINED ENCLOSURE DENOTES 46-ACRE STORAGE BASIN to be built for impounding spent liquors from Crown Zellerbach Corp.'s Camas, Wash. mill—partially showing at top right. White lines across slough and island indicate existing discharge line built in 1950 from mill to deep-water outfall in Columbia River's main flow at cost of $271,000.**

### New Slime Control Approach

Based on three and half-years of joint research by Crown Zellerbach Corp. and Washington Pollution Control Commission, Crown Z is undertaking a $750,000 abatement program at its big Camas, Wash. mill. This project is designed to starve the slime (sphaerotilus) organism in the lower Columbia River. Tests have shown that an intermittent discharge significantly reduces the slime growth rate.

The control program calls for building a 46-acre seepage-proof storage basin in which to impound waste liquors left over from the mill's chemical pulping processes. When in operation next year, about 95% of the organic materials from the mill will be collected and controlled in abatement.

This collection system will receive all wash waters from the blow pits, evaporator condensates from kraft process and substantial portions of the kraft bleach effluents.

These pulping leftovers are to be released periodically into deep water through an outfall line located in the main river channel 30 ft. beneath.

The impounding basin, located on an island opposite the mill, is to have capacity for holding the mill's sulfite pulping leftovers for periods of up to 60 days in situations when river conditions of water temperature, phosphorus content and stream flow make this procedure necessary.

Herman R. Amberg, in charge of Crown Z's Columbia River sphaerotilus control research until recently promoted to plastics research manager, reported at the council sessions on studies from which the abatement project developed.

Miller Stein Amberg Gellman Dimick Dyke

REPORTING STREAM-AIR IMPROVEMENT at West Coast meeting of National Council for Stream Improvement held at Portland, Ore. Participants were GEORGE E. MILLER, res. mgr. of Columbia River Paper Mills, presiding as chairman; JEROME STEIN, director of Rayonier's Hoodsport (Wash.) laboratory; HERMAN R. AMBERG, headed Crown Zellerbach's Columbia River slime-control research; ISAIAH GELLMAN, Council's West Coast regional engr.; PROF. R. E. DIMICK, chairman, Dept. of Fish & Game Management, Oregon State College, and GEO. E. DYKE, chairman of National Council's board of governors, who stressed importance of informing the public of industry's cleaner air-water accomplishments.

# Dr. Louis Wise, TAPPI Medalist, Honored by Institute Associates

### Tributes express feelings of industry

Beloved sage and scientist of this industry, Dr. Louis E. Wise of the Institute of Paper Chemistry received one of the industry's highest awards late in February at the annual National TAPPI meeting in New York as winner of the coveted TAPPI Gold Medal.

Interviewed by PULP & PAPER, several of Dr. Wise's co-workers at the Institute in Appleton paused to pay tribute to this biochemist who has devoted more than 40 years to bettering the art of papermaking while finding time also to express himself in poetry.

It is in verse that Dr. Wise has expressed his affection for the raw materials of his industry. From his "Within a Seed" comes this excerpt:

"This seed may bring into the light
A noble trunk which men will
Awkwardly, and midst the strife
Of other men, transform into the printed page."

(In "The Last Word" page in this issue the reader can browse through the complete poem.)

PULP & PAPER here presents tributes to Dr. Wise from some of his associates at the Institute:

**John G. Strange, president:** "He is a person of outstanding intellectual ability. More important, however, are his genuine modesty and complete integrity. These have given him special stature and have made him an inspiration to students and staff."

**Roy P. Whitney, vice president and dean:** "Dr. Wise is truly one of the 'elder statesmen' of our faculty. His friendly and sympathetic counsel and guidance have been an inspiration to faculty and students."

**Harry F. Lewis, vice president and former dean:** "Dr. Wise and I have been friends since World War I, when we were associates in the Color Investigation Laboratory of the Bureau of Chemistry in Washington. During the years since, his high professional standards, excellence in teaching, imaginative research and his skill in technical writing have influenced the development of many of the technical and management personnel of our industry."

**J. A. Van den Akker, senior research associate, physics:** "Louis Wise and his truly wonderful career give the lie to the often-heard opinion that the scientist is a narrowly educated specialist whose background in the humanities is sadly deficient. In his hands, science is a warm, fascinating field of the mind's activity as well as an area of endeavor that is 'useful' to mankind."

**B. L. Browning, research associate:** "Dr. Louis Wise is to his colleagues throughout the world 'Dr. Wood Chemist'. His endeavor has been to explore, to ponder, to point out uncharted paths, just because the chemistry of wood is an intriguing and fascinating subject."

DR. LOUIS E. WISE, recipient of 1960 TAPPI Gold Medal.

**Irving H. Isenberg, research associate:** "Scholarship, understanding and zeal for high standards have made Louis Wise an inspiring teacher, respected colleague and faithful friend."

# Here Are Facts About That Penney Paper Playsuit and What Army Is Doing With It

### It's true that store chain is experimenting

Reports published in newspapers that J. C. Penney Co., Inc., national store chain has developed a paper playsuit which is "forerunner of whole paper wardrobes to be worn a few times and discarded", apparently is somewhat ahead of the game.

PULP & PAPER contacted P. J. Fynn, director of the research laboratory of J. C. Penney Co., New York, and he says: "The investigation into possibilities of non-woven paper fiber products is exceedingly tentative and as yet we have not developed a commercial product."

A picture of a pretty girl in a Penney playsuit of paper was published in the newspapers with the comment that "the U.S. Army is testing some now at Fort Sam Houston in Texas.

The facts in the case are revealed in this letter from Mr. Fynn:

Mr. Albert W. Wilson
Editor
Pulp & Paper
1791 Howard Street
Chicago 26, Illinois

Dear Mr. Wilson:

The information available on disposable clothing is exceptionally meager. Except for a few specialty items out of plain white non-woven sheet materials made of paper fibers I know of no manufacturing of this sort.

Our laboratory has experimented with making up this type of material into regularly styled and colored garments such as the playsuit you mention, but we find them not economically feasible on the basis of wear-once-and-destroy type of thing.

The investigation into possibilities of non-woven paper fiber fabrics is exceedingly tentative and as yet we have not developed a commercial product.

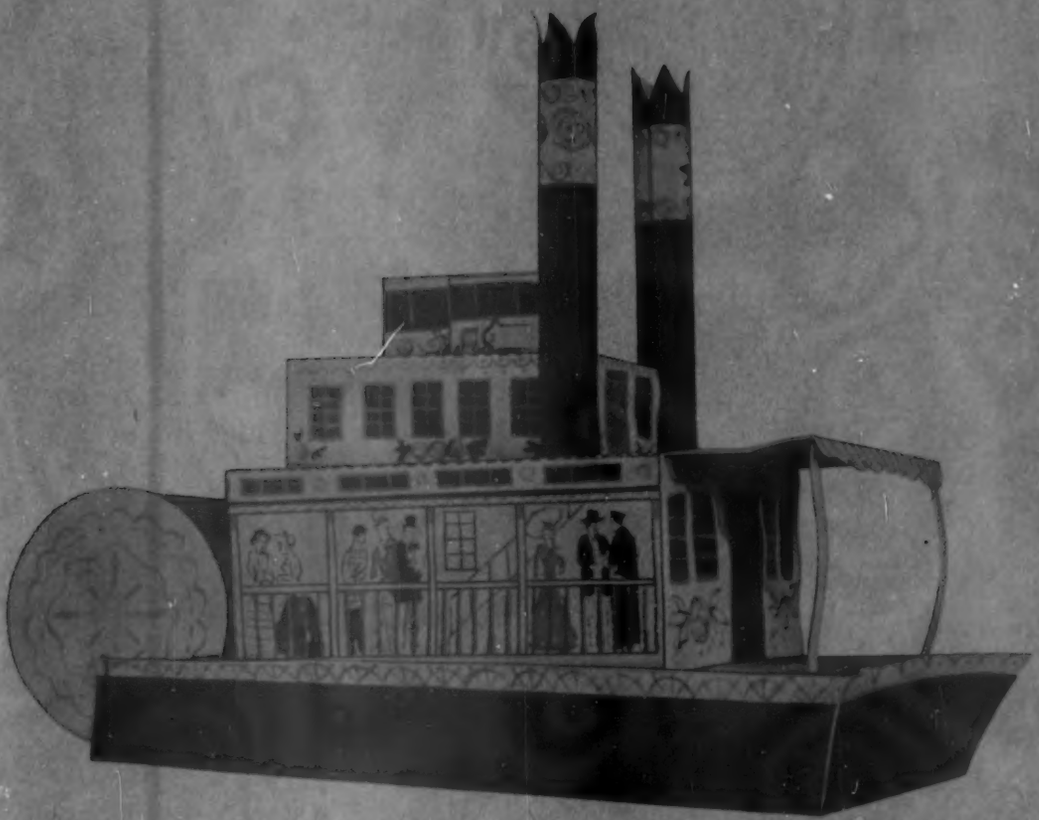
We appreciate your interest in this matter.

P. J. FYNN,
J. C. Penney Company, Inc.
Director Research Laboratory

### Biggest Plate Heat Exchanger For Swedish Pulp Mill

Stockholm . . . The world's largest plate heat exchangers of their kind will be delivered by AB Separator, Stockholm, to the Svenska Cellulosa Ostrand mill. The De Laval units will be dimensioned for recovering about 90% of the heat of the bleaching plant waste water, representing a value, based on current oil prices, of Kr. 15,000 (£1,000; $3,000) per 24 hours at continuous operation.

Design features include a special type of corrugation of the heating surfaces to minimize depositing of fibers and particles contained in the waste water. The cleaning of the exchangers is facilitated by hydraulic locking devices. Each plate exchanger has a weight of about five tons and is made from special stainless steel.



# TALK OF THE TOWN

## AT THE TAPPI CONVENTION

was Cyanamid's Melostrength* Paper Boat-Bag Exhibit. To dramatize the wet-strength of paper treated with Melostrength resin we turned bags into boats and floated them in a tank.

**THIS SHEET IS SIMILAR TO THE PAPER USED AT THE EXHIBIT**

It is made with Parez® 607 paper resin, Cyanamid's effective Melostrength wet-strength resin. You can judge the results for yourself by using the approved TAPPI standard methods for testing wet-strength.

*Trademark

CYANAMID

Turn page for more facts

# THERE'S MORE TO THIS SHEET OF MELOSTRENGTH PAPER THAN MEETS THE EYE

It is ideal for use in grocery bags. It has the extra wet-strength needed to minimize bursting danger during rainy-day shopping. It can carry frozen packages and other moist articles with a high degree of safety. After articles have been removed, it makes an excellent bag for re-use in a home.

**It was made with Parez 607 resin,** Cyanamid's effective Melostrength resin for imparting a high degree of wet-strength. Like all papers made with Parez 607, this sheet had its wet-strength properties the moment it came off the machine. No warehouse space required for the usual natural aging.

**Use of Parez 607** provides the same wet-strength reliability for automobile seat covers, tissues, laundry tags, toweling and other papers where wet-strength is important. For further information, call your Cyanamid Paper Chemicals salesman.

**The Cyanamid Melostrength Exhibit at the TAPPI Convention** was the opening step of an overall Melostrength program to emphasize the importance of Parez 607 in making wet-strength papers.

**Utilize Parez 607** and the HE† Process to meet ordinary wet-strength specifications with less resin, or to give superior wet-strength with the same amount of resin now needed.

†High Efficiency Process for resin economy—patent applied for by American Cyanamid Company

melostrength* paper
Wet or Dry . . It's Stronger
* ® AMERICAN CYANAMID COMPANY

CYANAMID

AMERICAN CYANAMID COMPANY, PAPER CHEMICALS DEPARTMENT, 30 Rockefeller Plaza, New York 20, N. Y.

Pilot Touch controls engine clutch, direction reverser, and clutch-brake assemblies for each track. To steer, operator moves single stick in direction desired. To reverse direction, single stick is moved back (or forward) then centered.

# Bring Out More Cords Per Day with Exclusive John Deere Control

New John Deere Pilot Touch replaces both steering levers and the direction reverser lever—puts crawler operation under control of one hand. The operator is not only spared nearly all the work of maneuvering through rough terrain, but for the first time he has one hand always free for control of winch, dozer blade, logging fork or other equipment. Result: better work on roads and landings, more care given to immature and seed trees; higher daily production of pulpwood or sawlogs.

John Deere Pilot Touch is an exclusive development available optionally on both gasoline and Diesel "440" Crawlers. Contact your John Deere Industrial Dealer through the classified section of your telephone directory for more information, or write direct today.

*John Deere Industrial Division, Dept. 2653*
*3300 River Drive, Moline, Illinois*

**JOHN DEERE** *"Specialists in Low-Cost Power with a Heavyweight Punch"*

CONSIDERING FUTURE OF SOUTHERN WOODLANDS at Atlanta meeting were (from left) Karl Swenning, W. A. Binns, SPCA Gen. Mgr. Henry Malsberger, Philip Briegleb, Karl Bendetsen and C. B. Stauffacher.

# Ignoring Hardwood Value?

## Speakers at Southern Pulpwood meeting stress need to cultivate this species; study other problems affecting future of South

By WILLIAM F. DIEHL, JR.
Southern Editor, PULP & PAPER

Atlanta, Ga.

● It might rightfully be said that this is the year of the hardwood—at least as far as the South is concerned. For years now, attention has been directed at hardwood control, clear cutting, increasing pine productivity, girdling hardwoods. The hardwood has been relegated to the position of "po' relation."

But last month at Atlanta's Dinkler-Plaza Hotel, the Southern Pulpwood Conservation Association took a long hard look at the "lowly hardwood" and decided the relative wasn't as "po' " as one might think. As far as many experts are concerned the hardwood that once cluttered up swamps and river bottoms might very well be a real woodlands prize.

"The fact is," said the U.S. Forest Experiment Station's Philip Briegleb of New Orleans, "the Southern forest is predominantly a hardwood forest."

Of the South's 193 million forest acres, pine predominates 92 million, the remaining 101 million is in hardwood. Overall, said Mr. Briegleb, hardwoods make up 55% of the solid wood volume of growing stock. What makes this a larger headache is that 31 million acres of hardwoods are growing where they do not belong.

"They aren't any credit to themselves and not likely to ever be a very valuable asset for their owners," he said.

In all, 70 million acres of Southern land is capable of growing high quality hardwoods at attractive rates (up to $1.62 cft. for furniture veneer) and these include four broad physiographic locations: River bottom lands, 22 million acres; swamps, 6 million acres; creek and small stream bottoms, 9

THE COMMERCIAL FOREST LAND OF THE UNITED STATES?
117
5
169
193
IN THE WEST
IN THE LAKE STATES, CENTRAL & NORTHEAST
THERE ARE 169 MILLION ACRES OF COMMERCIAL FOREST LAND
IN THE SOUTH
THERE ARE 193 MILLION ACRES OF COMMERCIAL FOREST LAND
IN THE PLAINS
THERE ARE 5 MILLION ACRES OF COMMERCIAL FOREST LAND

CHART SHOWS HOW U.S. FORESTS are divided by region with 193 million acres in the South. Experts claim areas like these at right need hardwood cultivation now.

million acres; rich upland soils, 33 million acres. A study of recently cutovers shows that less than half of the Southern hardwood acreage has been left in reasonably productive condition. This is the lowest rating of any forest group in the South and yet if the TRR is accurate, hardwood needs are expected to increase 270% in the next four decades.

### How Bad is the Hardwood Lot?

According to Mr. Briegleb, Southern hardwoods are among the best in the nation yet their condition reflects years of poor treatment. In Mississippi alone, the supply of hardwoods over 18 in. declined more than 40% and volume in No. 1 and No. 2 sawlogs declined 50% during the past decade. One out of every three or four hardwood trees is a cull with no commercial value.

"With a few encouraging exceptions," he went on, "we can say that Southern hardwood management is so primitive that the opportunities for improvement are virtually unlimited."

His recommendations: "Give hardwoods effective protection since fire kills young trees and insects infect what is wounded and not killed; protect it from livestock; give hardwoods on good sites the benefit of cull tree removal, weedings and release cuttings to favor the best stems; harvest poorer, slow-growing trees and release thrifty trees. And finally a real challenge: "We haven't really given our pines a fair chance. But in comparison we have neglected our opportunities in hardwoods to a vastly greater degree. We should renew and concentrate our efforts in both fields."

### Expanding the Theme

Karl Bendetsen, Champion & Fibre's vigorous vice president, picked up the theme of hardwood development and carried it even further. He attacked the term "inferior hardwoods" with the most logical of all attacks: "It is wrong to give the impression to anyone that we make products from inferior materials. We don't use inferior trees to make superior products."

Mr. Bendetsen reminded the audience that hardwoods help make a smoother, flatter, better sheet of paper and pointed out that hardwood use is on the upswing, not decrease. Then he sounded a note that's been heard before: "The hardwood pulpwood tree is the hardest and most expensive thing to process of any farm product. Nothing approaches the complexity of taking the wood crop from the 'farm' and moving it to the woodyard.

"We are still handling trees like the Phoenicians did," he went on, "we must find a new way to do things in the woods. Other areas are bringing down their cost of harvesting while we see ours rise. It behooves us to get on the ball. Isn't it time for us as an industry to promote and provide funds to develop a tree-harvesting or pineapple harvesting or PEANUT harvesting machine!"

### A Plug for Dixie

Picking up the ball for the South, Charles Stauffacher, executive vice pres. of Gair Paper Products, pointed up the South's vast potential as an industrial center and raw materials source. "This largest single forest area in the country makes the South the undisputed wheel-horse of the new economic surge," he said. Then he added, "in the South, the woods are full of prosperity."

How does the South stand as far as paper is concerned? Mr. Stauffacher gave the answer. Some 57% of total U.S. pulpwood consumption comes from this area; of the 350 pulp mills in the U.S., 75 are in the South; and in 1958 Southern mills produced 57% of the 38.3 million tons of paper and paperboard used in the nation. Added to this are current increases in bank deposits, retail and wholesale sales, personal incomes, construction values, use of electric energy and many other indicators as to the growing industrial prowess of Dixie.

"The 1960 census will show an America of 180 million people," he said, "with a spending increase over the 1950 census of $14 billion. Full utilization of the woodlands serves the public's interest. The pulp and paper industry must do an ever-better job of pointing out that trees serve the people of the South and the nation when put to work to fill the needs of people."

### How Communication "Collapses"

In the field of public relations, W. A. (Bill) Binns, of Union Bag-Camp at Savannah, put on a dramatic show of the collapse of communications when carried by word-of-mouth. His trick was simple. A man was told a simple story while six others were out of the room. Then each man was brought back in one at a time and story was repeated to the first man, then the first man repeated it to the second, the second to the third, etc., until the sixth man had heard the story. He then gave his version followed by a tape recording of the original story. The two stories were hardly the same. As a climax of the demonstration, Mr. Binns exhibited a glass window which turned around in a complete circle. The audience was mixed in its opinion over whether the window turned a full circle or turned halfway around, then returned.

"Seeing isn't even believing anymore," he concluded.

### The South's Pilot Forests

The meeting was kicked off with SCPA Manager Henry Malsberger's annual report—a conclusive look at the tremendous amount of work the association accomplished in the past year. Perhaps its most exciting project was the Pilot Forest program. Last year the SPCA established 92 Pilot Forests as permanent educational installations to show the economic possibilities of forest development. Proper care as well as cutting practices will be demonstrated on these tracts. More than 8,000 acres are now devoted to Pilot Forests and last year 12,750 people visited them. Size ranges from 10 to 300 acres.

## Operation CHEC Reveals What Makes Campers Act As They Do

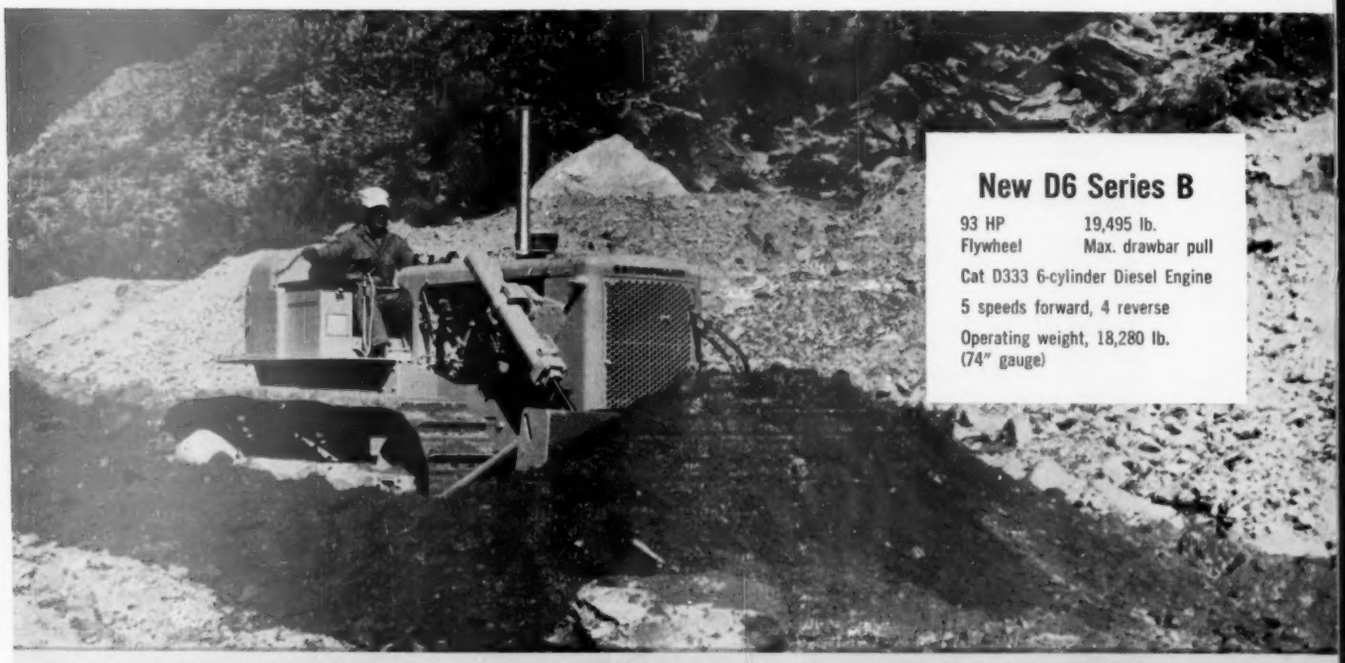
### Weyerhaeuser policy is to treat them like grown-ups

A problem which all forest using companies must face—the camper problem—was presented to the SPCA meeting in Atlanta along with one company's answer by B. L. Orell, Weyerhaeuser Co. vice president, who journeyed from the West coast to speak. Meeting the inevitable pressures from recreation-seeking public is a common problem in both the South and the Northwest, Mr. Orell said.

Weyerhaeuser has sponsored a public recreation program on its tree farm lands for many years and with great success. Using the results of a survey conducted when this program first started, Weyerhaeuser has been able to reduce and control some of the major abuses of its hospitality. One secret: Treat the hunter like a mature person and he will act like one.

Early in the game, a written policy on public recreation was adopted spelling out the fact that tree-growing

*Continued on page 116*



**New D6 Series B**

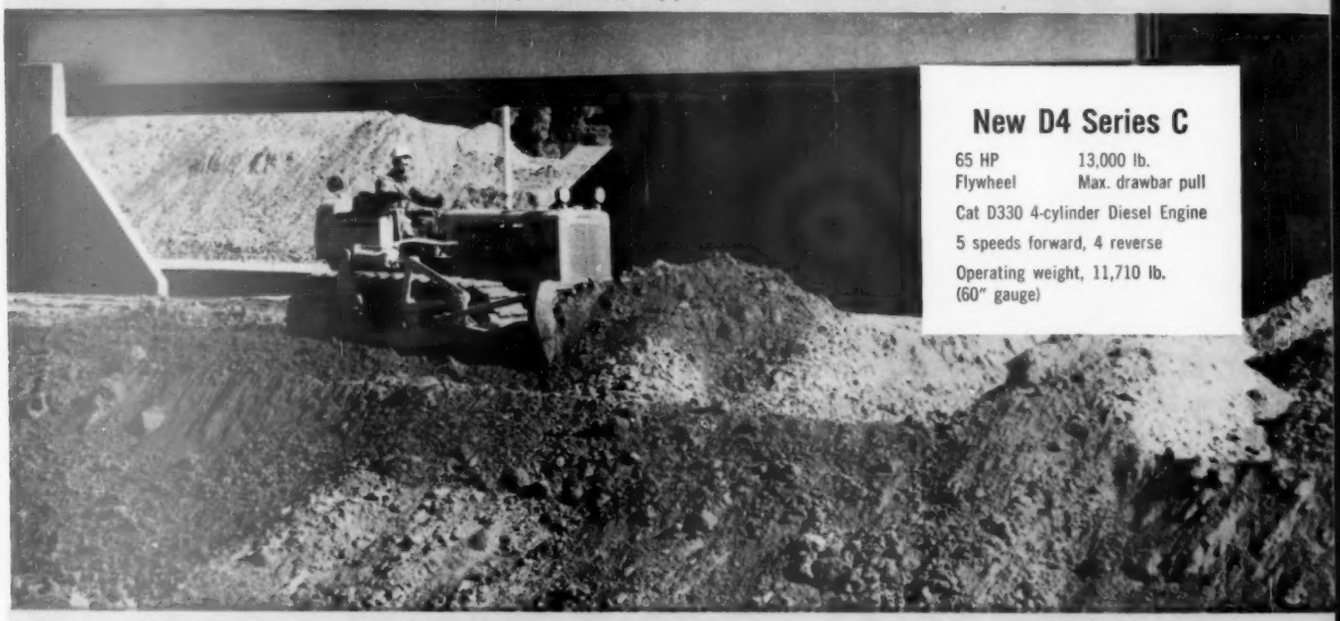
93 HP Flywheel — 19,495 lb. Max. drawbar pull

Cat D333 6-cylinder Diesel Engine

5 speeds forward, 4 reverse

Operating weight, 18,280 lb. (74" gauge)

**RUGGED MATCHED ATTACHMENTS** for the D6 and D4 include Bulldozers, Tool Bar, Scraper, Rock Rakes, Winches, K/G Blade, Rippers and others.



**New D4 Series C**

65 HP Flywheel — 13,000 lb. Max. drawbar pull

Cat D330 4-cylinder Diesel Engine

5 speeds forward, 4 reverse

Operating weight, 11,710 lb. (60" gauge)

**IMPROVED STARTING ENGINE** for both tractors has recoil starter for fast starts. Also 12-volt in-seat starting available. 24-volt direct electric starting optional.

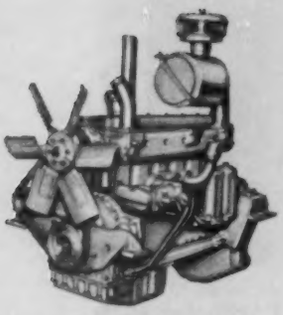
# CATERPILLAR ANNOUNCES the

***completely redesigned***

***for faster and***

***greater production***

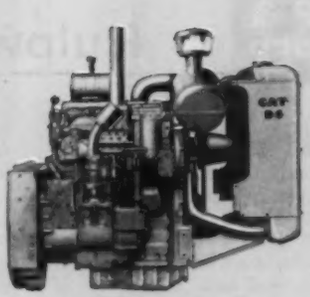
There's no time like now to upgrade your equipment spread. These two new tractors not only look different—they are different. Each, in its own class, answers your needs for higher production and greater operating economy. Some of their important new features are described on these pages. In addition to these improvements, each machine provides other famous Caterpillar features... the dry-type air cleaner,



**D6 93 HP 6-cylinder Engine**
Maximum drawbar pull, 19,495 lb. The D333 Engine provides power with dependability for a long life of economical operation.

## New Caterpillar Diesel Engines deliver 25% more lugging ability

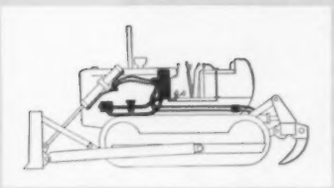
For the D6 and D4, two completely new Cat Diesel Engines. 25% more lugging ability. New compactness with new ruggedness. Famous Cat fuel injection pumps in new, easily serviceable housing. New direct acting governor that makes quick fuel adjustments, picks up loads fast. New, improved gasoline starting engine.



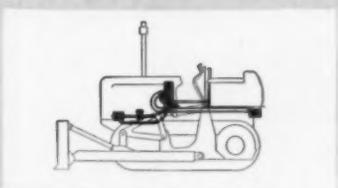
**D4 65 HP 4-cylinder Engine**
Maximum drawbar pull, 13,000 lb. New design of the D330 results in smooth, vibration-free performance in all speed ranges.

## New integral hydraulic systems put more power where you need it

More work power at the tools—that's one of the big advantages of these new Cat hydraulic systems. Under-the-hood mounting of tank, pump and valves permits convenient routing of hydraulic lines to bulldozer or implement cylinders, frees front and rear for mounted equipment. Center-pivoted cylinder mounting on D6 gives increased blade lift/drop range for greater production. Hydraulic control system provides hand control for bulldozer and/or ripper, foot control for tilt cylinder on D6.



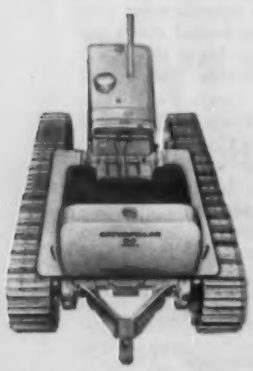
**D6 Integral Hydraulic System**
No. 165 Hydraulic Control for bulldozer
54 GPM Pump—1500 PSI
No. 143 Hydraulic Control for No. 6 Tool Bar
29 GPM Pump—1700 PSI



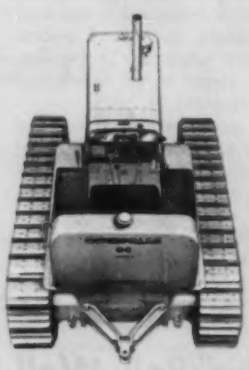
**D4 Integral Hydraulic System**
No. 143 Hydraulic Control with:
29 GPM Pump—1700 PSI for bulldozers
17 GPM Pump—1700 PSI for tool bars

## New operator convenience and comfort in co-ordinated compartments

The cockpits are all new. Controls are co-ordinated to make one motion flow into the next, reducing hand movements and speeding every operation. Forward-reverse lever (new on the D4) is next to the operator's right hand to speed 'dozer cycle times. Short-travel transmission speed selector shifts gears easily, quickly. Boosters for steering clutches save muscles . . . increase efficiency.



**D6 operator's compartment**



**D4 operator's compartment**

# New D4 Series C and D6 Series B Tractors

hydraulic track adjusters, lifetime lubricated track rollers, the oil clutch, the forward-reverse lever. Your Caterpillar Dealer will be happy to give you the complete facts about both the new D6 and the new D4 and demonstrate them on any of your jobs. The tougher, the better.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD

is the company's foremost obligation to the public but that public recreation will be provided and encouraged as a secondary use. Weyerhaeuser backed this up with Operation CHEC, an attempt to determine what makes the recreationist act and react the way he does. Several basic conclusions of the experiment have since been applied to the company's treatment of recreationists.

Today, Weyerhaeuser maintains 27 tree farm parks on its timberland in western Washington and Oregon. It has fostered three fish farm ponds for raising salmon and trout, constructed a public boat launching ramp and has been entertaining about 125,000 outdoor recreation seekers a year with its program. By catering to the public demands, the company has not only reduced vandalism but also has turned the program into a valuable public relations operation.

**B. L. ORELL; vice president Weyerhaeuser Co., told SPCA meeting in Atlanta how his company solves the camper problem—"Treat them like adults."**

## Rebirth of New York's St. Lawrence Valley: Hardwood Pulping Holds Key

**Niagara Mohawk power surveys area with eye toward increased output.**

Abundant hardwood supply is the new key to Upper New York State's St. Lawrence Valley. In a recent survey conducted by Niagara Mohawk Power Corp., pulp and paper is shown to be gaining ground thanks to technological advances leading to extended use of broadleafs in pulp manufacture.

Coupled with increased wood supply are abundant water and hydroelectric power sources. The valley is the focal point of St. Lawrence Seaway construction.

Pulp and paper accounts for the area's largest manufacturing and employment group. The late 19th century saw the most spectacular development in the industry, when abundant softwood, water and power attracted firms to the region.

In more recent years New York pulpwood requirements have increased to the point where they are now three times the local softwood supply. State forests provide less than 40% of state needs.

### Coming of Hardwoods

Development of hardwood pulping in the last decade, "offers new vistas of growth in the pulp industry." Three quarters of the pulpwood potential in commercial forests is hardwood—more than 101,000 cords with excellent regenerative powers; growth is well in excess of cut.

Through the years manufacturers have perfected both commercial and mechanical methods of pulping woods such as birch, aspen and maple to supplement such traditional softwoods as spruce and fir.

Although softwoods still dominate the pulpwood supply, hardwoods have shown great gains in recent years. From 1947 to 1954, softwood consumption went from 17,028,000 to 24,400,000 cords (43%). In the same period, however, hardwoods jumped a spectacular 80%—from 2,687,000 to 4,801,000 cords.

Current estimates indicate that approximately 30,000,000 cords of softwood are being used in pulpwood production versus 5,000,000 to 6,000,000 cords of hardwood.

### 100,000 Cords Annually

Officials of the New York State College of Forestry (Syracuse) have estimated that the timberlands of the St. Lawrence Valley and adjoining areas could adequately supply the demands of a pulp manufacturer consuming 100,000 hardwood cords annually. Among major firs in the region now using considerable amounts of hardwood are St. Regis Paper Co., Diamond National Corp., Gould Paper Co. and J. P. Lewis Co.

Findings of the market analysis recently completed by Niagara Mohawk for the St. Lawrence Valley are available through the Director of Area Development, Dept. L-M Niagara Mohawk Power Corp., Syracuse, N.Y.

## "Panicky" Bell, Well-Known Logging Supt.

George "Panicky" Bell, longtime logging supt. for Powell River Co., Rayonier Canada and other leading B. C. companies, died suddenly Jan. 24, aged 59. He was one of the most colorful figures in the West Coast woods, and left a trail of anecdotes that will be related for years to come.

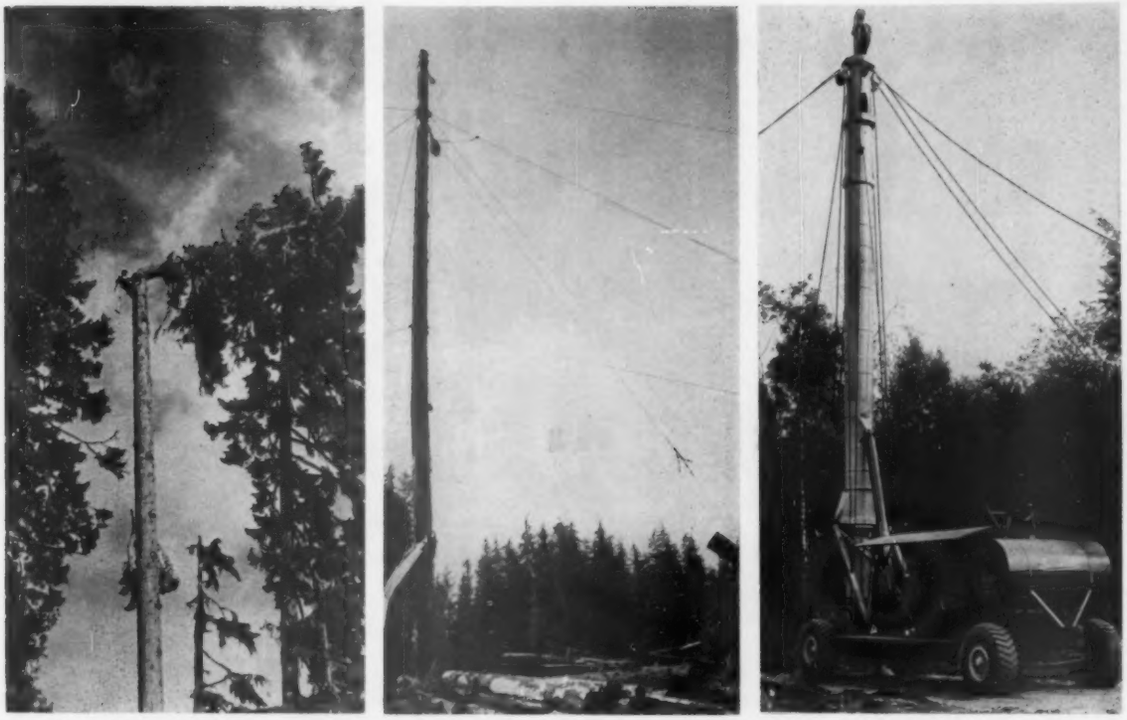
George Bell was better known as "Panicky" than by his given name. The sobriquet he earned years ago when bossing a crew for Merrill, Ring & Wilson. Everything out of the ordinary was sensational to Bell and he used flamboyant language to whistle punks and chairmen of the board. But "Panicky" was the term he applied to any break in routine—a disabled tractor, a rough road or a sudden turn in the weather. But he was never panicky himself; he always knew just what to do.

Sometimes he came up with some odd ideas. Once, when logging a burned-over area, a paper mill manager complained that charred wood was going into the grinder room. Bell was asked to be more careful, as the blackened wood would impair the newsprint.

"So what?" demanded "Panicky" Bell. "Let them produce dark paper for a change and get the printers to use white ink!"

He was born in Scotland, but he was a child when he came to B. C. He never advanced beyond rank of supt.; an office job would have killed him. But he was on familiar terms with some of the biggest figures in the industry.

He liked to go goose hunting with Norman English, Tom Murphy and Claude Germyn, Powell River executives, but in the woods when the order was for more production he was in his element. The more panicky the situation, the happier he was.



**TALL STRAIGHT TREES** such as the one above are becoming scarce as logging recedes into forest areas previously regarded as inaccessible. As a result the natural spar tree and colorful high rigger are gradually being replaced by the portable spar and its mechanic-operator.

# Days of High Rigger Numbered?

## Losing jobs to portable mechanical spar which can be transported readily, positioned within minutes

• In the Pacific Northwest's pulpwood and saw timber forests the natural spar tree and the colorful high rigger are being gradually replaced by the portable spar and its mechanic-operator.

The advantage of the artificial spar tree lies in the fact that it can be readily transported and positioned wherever required for yarding logs in a matter of hours or even minutes, in some cases, whereas it usually takes days to select a suitable natural tree, straight and tall enough, and in just the right location. The growing scarcity of such trees as logging recedes into forest areas previously regarded as inaccessible is another factor that has encouraged the use of manufactured portable spars.

There have been several portable spars on the market during the past few years. One of the first to be developed was originated by Reid Priest of Priest Logging, Inc. of Port Angeles, Wash. Berger Engineering Co. of Seattle was one of the first to manufacture such units. Among the others are S. Madill, Ltd., of Nanaimo, and Burrard Der Dock Co., North Vancouver, B.C.

Now Gearmatic Co., Newton, B.C., has created a steel spar tree that is not only portable but moves on its own power—the first fully integrated, self-contained unit of its kind. The machine, mounted on a wheeled vehicle whose operations are controlled by the same operator who manipulates the tree itself as well as the yarding. The first machine, called Sparmatic, was recently demonstrated before a group of Northwest loggers. It was powered by a 275 hp Cummins diesel engine. The entire unit, including spar, yarder, engine and cables, weighs about 55 tons. A Skagit BU-135 model is coordinated with the Sparmatic as a yarder. There is a Twin Disc converter and Quincy "325" compressor.

The tubular spar tree is made of Stelcoloy high tensile steel and when fully erected stands 100 ft. from ground level. Frank Lawrence, president of Gearmatic Co., who personally engineered the Sparmatic, says the machine will go wherever a logging truck will go and that it can be prepared for action within 20 minutes.

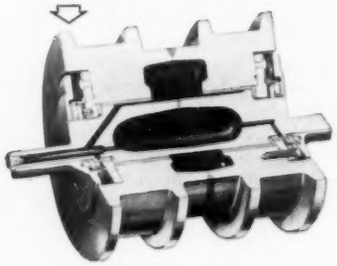
## HOW THE TD-15

# skids 1,000 bf loads from "hip-boot" gum and cypress swamp

—for C. B. King Lumber Co., Bunnell, Fla.

**Coming into the landing** with a big turn, the "15" loses no time in "soupy" muck. "It really handles easy, has good flotation and balance for all-around faster operation with large payloads," declares operator E. L. Bell.

**Heavy-duty TD-15 Dura-Rollers** are designed to perform dependably in super-tough, "eat-'em-alive" swamp logging conditions. These exclusive International-built track rollers feature thick shells—king-sized lube reservoirs—full-floating, precision-fitted seals—and relief passages that permit power lubrication!



**Natives say this spongy swamp land quivers even when a muskrat steps down too hard!**

Even so, C. B. King Lumber Company, Bunnell, Florida skids log loads as big as 1,000-bf through these "hip-boot" conditions—with their new **105 hp** International TD-15 crawler. Each 40-hour week, the swamp-cruising TD-15, "lands" 30,000 bf of black gum, cypress, and slash pine—skidding as far as 2,000 feet!

**Flotation is a necessity,** and the wide-track, 74-inch-gauge "15" qualifies big. Correct tractor balance takes full advantage of 7½-foot track-on-ground length to provide full-length support—prevents "rocking" or rear-end heaviness, and assures a level tread!

**Logs almost float** as the TD-15 owned by C. B. King Lumber Co. "wades the stream"—logging the 1,200-acre O'Reilly tract in Volusia County, Florida. Over 70% of the selective logging operations done for St. Regis Paper Co. here is under swamp conditions.

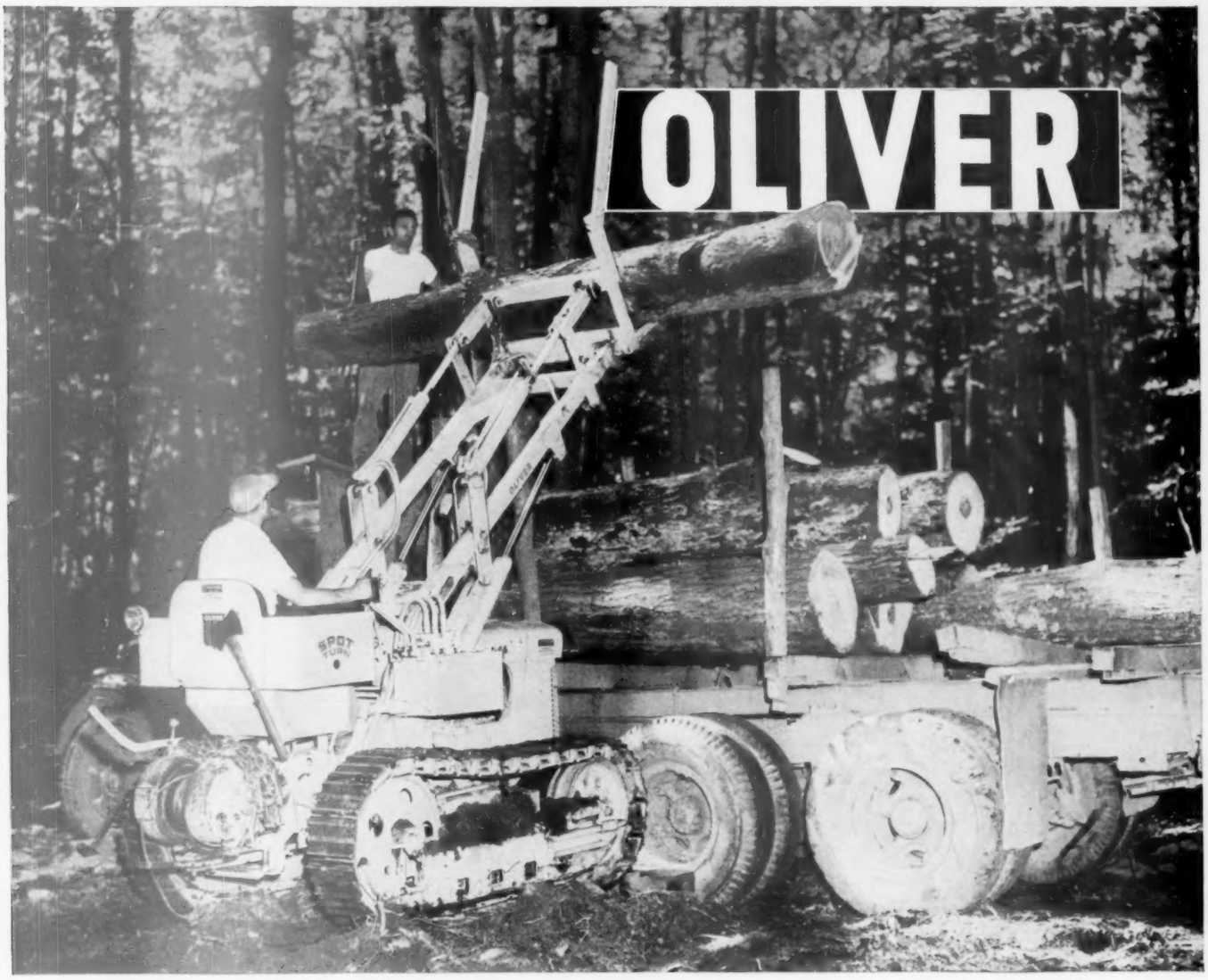
**Fast engine and control response** is vital to "race" across bog spots. The TD-15's millions-of-hours-proved 6-cylinder Diesel comes alive like a bolt of lightning when you need an extra power surge. And speed-pattern shifting lets you "whip" into next-gear-higher, in a split second—when you need instant action.

**Positive protection from water-borne abrasives** is a "must"—for full-profit, swamp-logging crawler performance. Electronic heat-treatments of alloy steel parts give International track chains a deep armor against abrasive wear. And only International equips crawlers with Dura-Rollers. These track rollers have king-sized lube reservoirs; precision-fitted, full-floating seals; and pressure-relief passages that permit power lubrication for minimum maintenance!

**Prove TD-15 ability to outperform** and outearn anything else on tracks in the 100-hp class. Try it in swamp, rough woods, sand—anywhere you've got big loads to move at a profit. Compare low upkeep, long life features. See your International Construction Equipment Distributor for a demonstration!

*International*® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE




# THE THIRD MAN? HE'S OUT CUTTING MORE LOGS!

It's designed for woods work—right from the ground up. Four speeds, from 1½ m.p.h. to a peppy 5½ m.p.h. Better than 30 h.p. gas or diesel engines. Buckets, blades and boom available for quick attachment to loader arms.

## Logger finds two men do the work of three with Oliver's husky OC-46

It used to take three men to load these 1500-lb. logs for Ted Urban, contractor of Lake Como, Penn. But with the quick, easy lifting power of his new OC-46—and no tongs that had to be fastened to the logs—the third man is free to go out and cut more timber.

What's more, the dependable hydraulic fork lifts logs 11 feet, up to the top of the pile; there's no bother of pushing dirt to make a loading ramp.

But these aren't the only advantages of this nimble woods worker. With "Spot-Turn" steering, Mr. Urban says, the operator can get farther into the woods, easily moving in and out of narrow working areas to snake 2½ tons of logs out to the clearing.

**Ask for your own work test!**

See how the OC-46 can drag and lift more economically for you. Your dependable Oliver distributor will be happy to arrange for a demonstration. Then you can figure your own savings. See him soon!

OLIVER **THE OLIVER CORPORATION**

Industrial Division, Dept. 2232 400 W. Madison St., Chicago 6, Ill.

*a complete line of industrial wheel and crawler tractors and matched allied equipment*

"BIG STICK" pulpwood loader adapts to any bobtail pulpwood truck. More than 40 units supply Bowaters Southern Calhoun, Tenn. mill. Below, loader doubles as skidder. Using full length of wire rope, it can yard all wood within 250 ft. radius.

# New Loader

## . . . enables crews to average better than 2 cords/man day

● Within six months after the "Big Stick" pulpwood loader had been introduced to pulpwood suppliers of Bowaters Southern Paper Corp. at Calhoun, Tenn., some 40 units were in operation and production of three-man crews were averaging better than two cords/man day.

According to technical release No 59-R30 of the American Pulpwood Assn., a three-man crew normally runs the entire operation. One man on the seat over the cab operates the winch, a second on the truck bed controls the boom and loads the pulpwood on the truck and one man on the ground pulls out the cable which has either tongs or a sliding hook for bundles of pulpwood.

The loader yards wood as well as loads it onto the truck. Using the full length of the wire rope, it can yard all wood within a radius of 250 ft. Some operators prefer to yard the wood around the truck before actually loading it, while others prefer to load each turn of wood as it comes in.

The loaded boom is difficult to move if the truck is not absolutely level. Operators however, soon learn to carry blocks with them to level the truck.

The loader comes in one basic 14 ft. unit, containing 12 ft. of usable space, which is bolted to the frame of the truck. At the bottom of the center post of the unit a free-spooling drum with a capacity of 250 ft. of 5/16-in. wire rope is installed. The drum has a hydraulic clutch and mechanical hand brake and power is supplied from the truck transmission. Its practical working capacity of 500 lbs. is powerful enough to break the rope against a dead pull. The entire drum is mounted on sealed Fafnir bearings.

A seat which is part of the basic unit extends above the truck cab, and offers a full view of the entire operation. All controls are within easy reach of the operator. The non-powered boom is mounted at the top of the center post and will swing a full 360°.

The complete unit installed on a truck in Louisville, Miss. costs $675 and includes 125 ft. of 5/16-in. wire rope and one pair of 18-in. tongs. Additional wire rope is 18¢/ft.

The manufacturer, Brown Machinery Service, Louisville, Miss., also trucks these units (four to a truck) for installation by the customer. They are now working on a knock-down machine for "bolt-together" assembly.

**TORTURE TEST NO. 61-39-74**

SITE: McCulloch Test Laboratory, Los Angeles, Calif.

SAW MODEL USED: ONE/70 direct-drive

TYPE OF TEST: Variable load/speed endurance. 1700—7,000 r.p.m.

LENGTH OF TEST: 502.3 hours continuous

MAX. ENGINE TEMP: 382.16°F.

MAX. AIR TEMP: 111.22° F.

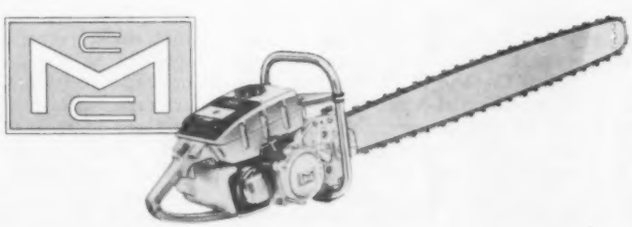
CONDITION OF SAW AFTER TEST: No mechanical, metallurgical, electrical defects which would cause down-time in the woods.

# 500 BRUTAL HOURS IN TORTURE CHAMBER PROVE STAMINA OF NEW McCULLOCH NUMBER ONE SAWS

A logging job takes rugged men and rugged chain saws. That's why the new McCulloch *Number One* chain saws were designed to be tough – built to be tough – *proved tough by torture test.*

The large picture at left shows a brutal endurance test. It's just one of hundreds of torture tests the new McCulloch saws had to pass. These torture tests prove that McCulloch *Number One* saws were built to take a beating and still stay on the job. Extensive field testing confirmed the lab torture tests. Hundreds of professional loggers and woodcutters throughout the country tested the new McCullochs *on the job.* Again, results proved that McCulloch makes the world's *Number One* chain saws.

*See your McCulloch Chain Saw Dealer for a free demonstration.*



**ONE/80** Gear-Drive

- More lugging power than any other saw its size
- Only 25 pounds • Takes bars up to 44"
- Takes 15" plunge bow • Dynamically balanced
- Pintail Chain. • **Seven models to choose from.**

**Prices start as low as $154.95**

LEADERSHIP THROUGH CREATIVE ENGINEERING

# McCULLOCH CHAIN SAWS

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McCulloch of Canada, Ltd., Toronto, Canada • McCulloch International Inc., Los Angeles 45, California

5-90018

# Cones From "Plus Trees"

**BEST IN 14 YEARS was last fall's fir cone season in British Columbia. Forester Don Schon records Douglas fir cones gathered by one of MacMillan-Bloedel & Powell River Co.'s collection crews.**

## when grafted as a twig onto nursery seedlings will enable British Columbia to produce a race of superior trees

• Some of the world's largest pulpwood trees are to be found in British Columbia. In few regions is the rate of growth faster. But foresters of a number of major pulp companies are co-operating with the British Columbia Forest Service to create a race of still taller, sounder and faster growing trees.

The program is a part of the long-term plan of the newly organized Plus Tree Board, to improve the saw log content of the forest as well as its pulpwood. It has been recognized that in future trees must grow quickly and produce logs of clear wood in order to compete with other parts of the world.

A small army of field men from industry and the Forest Service have been taking advantage of the unusually good crop of Douglas fir cones this season to seek out choice specimens.

Aim of the Plus Tree Board, according to Chairman W. G. Burch, B.C. Forest Products, is to increase volume and quality by adopting a technique developed by fruit growers. Since most forest trees do not produce seed during the first 15 or 20 years, the time element has always presented difficulties in efforts to improve the breed. To overcome this the board's field men are removing twigs from selected trees for grafting onto tree nursery seedlings.

These seed orchards made up of sturdy seedlings to which cuttings from "plus trees" are grafted, can be laid out like apple orchards yielding a large volume of superior seed stock to be harvested in the form of cones. This "blue ribbon" seed will then be used in the nurseries to grow seedlings for reforestation. B. C. Forest Products, the Tahsis Co. and Crown Zellerbach Canada, as well as the B. C. Forest Service, are making an immediate start on their own seed orchards. All are holders of tree farm licenses.

Secretary of the Plus Tree Board is Dr. Alan Orr-Ewing, a geneticist for the Forest Service. Other members, serving with Chairman Burch, are A. H. Bamford, B. C. Forest Products; Ken Mulholland, Crown Zellerbach Canada; Henry Bunce, Canadian Forest Products; Don MacLeod, Rayonier Canada; Sven Rasmussen, the Tahsis Co. and H. H. Beeftink, MacMillan–Bloedel & Powell River Co. It will be their responsibility to pass on the qualifications of "candidate trees" reported by field men.

Qualifications of such trees, are: higher volume of wood; straight stem with a minimum of taper; narrow, wedge-shaped crown and dominant single leader; freedom from rot, disease, frost crack or insect attack. There should also be indications that the tree will produce cones and pollen. If these conditions are met, wood quality will be assesed for straightness of grain, fibre length and angle, and other features.

Meanwhile several companies are concentrating on collection of cones from Douglas fir for replanting in cut-over areas. MacMillan-Bloedel & Powell River Co. has been carrying out an operation on Tin Hat Mountain at the 1,500 foot level. The forester in charge surveys the area, selects and marks out for picking the finest, straightest trees and then directs the cone collection crew, many of them high school students.

Another technique is followed on other companies' stands or on crown grant timber by Dr. Orr-Erwing and his assistants who shoot down preferred twigs with specially designed rifles. The twigs, when grafted to other root stock, perpetuate the desirable qualities of the parent tree. Under orchard-type culture, the grafted trees are expected to produce cones in two or three years, instead of the 15 or more years usually required. Controlled pollenation insures quality maintenance.

Despite the fact this has been the first "good" cone crop season in 14 years, Forest Service officials estimate that the 100,000,000 seedlings that could be produced from the seed collected could maintain the normal crown-land planting program for the next ten years.

# A Quality Analysis of Purchased Chips

## APA Southeastern Technical Committee Surveys 10 member companies to study their quality analysis and chip classification methods

By JAMES A. HOLEKAMP,
American Pulpwood Assn.

● Quality analysis of purchased chips seems at a beginning. Much work must be done before a suitable procedure of chip sampling and grading is available. There now seems to be no uniform procedure among mills for measuring the quality of purchased chips. There is also evidence that equipment and procedures now in use are quite satisfactory for laboratory checking of a relatively small lot of mill manufactured chips. But use of this same equipment and the procedures is unsatisfactory for grading the increasing quantities of purchased chips coming to our Southern mills.

This present state may hinder continuing efforts to furnish mills with a better raw material at a lower price. Without accurate testing, chip quality may drop. There is a need to develop equipment for rapid collection of a representative sample, the immediate analysis for quality and size and the determination of bark and moisture.

Such equipment should meet this requirement: the time lapse between collecting chip scale and grading information and the availability of tests results should not exceed time now spent in scaling and grading an equivalent volume of roundwood.

As a result of the questionnaire, these recommendations are made to the Southeastern Technical Committee:

1. Organize a special S.E.T.C. chip analysis project committee.

2. Consider and evaluate the following: a. The grain drill auger idea for collecting a representative chip sample. b. The liquid flotation process of separating bark from chips—a technique which might speed up time now required to determine bark percentage.

3. Cooperate closely with mill technical departments and the manufacturers of scales and instruments in a detailed study of the problem.

4. Recommend and submit plans for designing and developing suitable equipment and outlining improved techniques for speeding up scaling and grading of purchased chips.

Each company was asked these four questions in the questionnaire:

1. How does your company collect chip samples from each car and trailer, classify these chips, and make final chip analysis? Be sure to include coverage of methods for calculating bark percentage, dirt count, bruised chips, moisture content, etc. Please describe your entire procedure from beginning to end.

2. What are the features about your procedure of chip analysis and classification which you and members of your company like best?

3. What are the features which you do not like and which you feel warrant improvement?

4. What are some ideas which you feel may help bring about a more accurate chip analysis and classification test.

Consolidation results of the replies:

1. Three companies first conduct a visual examination of each car and trailer. This is done before unloading and before taking chip samples. If the scaler has the slighest doubt about chip quality, unloading is delayed until close quality checking is carried out.

2. Six companies take at least one grab sample as the car or trailer is being unloaded. Each sample usually totals 10 to 15 lbs. Two companies take more than one grab sample as the car or trailer is being unloaded. For example: when unloading each car, one company takes samples at five-minute intervals. Another takes a grab sample at the beginning, middle, and near the end of unloading.

3. Two companies make use of an automatic chip sampler located on the belt carrying chips from the pit where cars are unloaded.

4. Four companies mix chips taken from two or more cars or trailers coming from the same supplier. This composite is used for the chip analysis test. One company mixes as many as seven to eight cars coming from the same supplier before testing. Two others mix no more than four cars coming from the same supplier. One company composites all grab samples taken from trailer loads delivered by the same supplier in one day's time.

5. Six companies determine moisture content by the rather costly and time-consuming procedure outlined in TAPPI Standards.

6. Nine companies take bark percentage checks after first separating bark from chips manually. This is a costly and time-consuming procedure.

7. Nine companies employ the standard TAPPI procedures for classifying samples by chip size.

8. Three companies make payment to supplier based upon the results of chip quality analysis. Compensation is based upon a gradient scale of chip quality.

Criticisms:

1. Ten companies were indicated as dissatisfied with present equipment and technique of chip analysis. The following complaints were tendered:

a. There is an excessive time lapse between the taking of samples and the availability of test results. This time interval varies from 24 hours to more than one month. Chips are frequently converted into pulp and paper long before analysis reports are available.

b. Samples collected are seldom considered as representative.

c. Chip and bark quality analysis procedures seem time-consuming, costly, and laborious. Conventional laboratory testing equipment seems to be used almost exclusively.

Suggested corrective steps:

1. Three companies suggest the installation of a continuous chip sampling system to collect a representative sample. In turn, those companies who are now making use of the continuous chip sampling system contend that they must tolerate a sampling system which fails to provide chip quality values *before* the car is unloaded.

2. Develop a core-drilling device which will help correct the representative sample problem.

3. Develop special chip handling equipment and procedures which provide rapid chip analysis.

4. Limit testing time on the Williams Classifier to two minutes.

5. Check only for over-sized chips and sawdust.

6. Sample chips as they are manufactured. Require sawmillers to carry out a chip analysis of their own.

7. Work towards a rapid but sufficiently accurate chip sampling procedure which can give results before *unloading*.

8. Develop the necessary equipment and perfect the proper technique which can do a job of chip scaling and grading in the same interval of time now experienced in scaling and grading pulpwood.

## WEEK OF MARCH 14th...CATERPILLAR ANNOUNCES

# THE No. 944 TRAXCAVATOR

## ...the first of a new wheel loader line

Here's the first of a completely new line of equipment . . . the Cat No. 944 . . . rated at 2 cu. yd. capacity . . . that will soon include the No. 922 (1¼ cu. yd. bucket) and the No. 966 (2¾ cu. yd. bucket).

Watch for these new machines with the bold new design . . . they're ready to bring new standards to wheel loader operation. Take a look at the big new features that make this the easiest and fastest wheel loader to operate.

**Designed for action** . . . with plenty of power for both machine drive *and* bucket hydraulics. Choose from 2 great new engines . . . the compact, 4-cylinder Cat D330 Diesel Engine, turbocharged for maximum efficiency . . . or the 6-cylinder gasoline engine. Both are 105* HP units. Both are made to the same rigid standards. Whatever the requirements of your operation, there's a No. 944 powered to meet your needs.

Tailored to this power is a torque converter and power shift transmission, providing smooth, instant, finger-tip shifting. A full range of work and travel speeds is available. Travel Range gives 2-wheel drive for roading . . . Work Range automatically puts power to all 4 wheels. Reverse speeds are 25% faster than forward speeds . . . important in reducing cycle time.

**Designed for safety** . . . in the bold new lines. Bucket lift arms are completely in front of the operator. This gives him new freedom of movement . . . greater visibility.

The No. 944 brake system provides safer, more precise control. The *left* brake neutralizes the transmission as it stops the machine. This gives superior loading action in extra-tough material. The *right* brake leaves the transmission engaged for full control when creeping, working on steep slopes or roading downhill.

**Designed for economy** . . . sound engineering, modern design, service accessibility, quality construction . . . all add up to a new kind of stability. This is the kind of stability that minimizes maintenance and operating cost . . . keeps the machine working at top production . . . keeps it working profitably.

Visit your Caterpillar Dealer the week of March 14. See for yourself how the No. 944 Traxcavator pays off on your loader jobs.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**For comparative purposes, the maximum rating of the Caterpillar D330 Diesel Engine used in the No. 944 is 135 horsepower.*

**CATERPILLAR**

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**DIESEL ENGINES • TRACTORS • MOTOR GRADERS**
**EARTHMOVING EQUIPMENT**

**A GREAT NEW PRODUCT IN THE CATERPILLAR TRADITION**

**Wide steps make it safe to get in and out of the No. 944 from either side. No need to climb over tires. Lift arms do not obstruct operator.**

**The forward-reverse lever is located on the steering column. Both bucket control levers have kick-out devices: lift control releases at dumping height, tilt control positions the bucket for digging.**

**Fenders provide a handy platform for checking the engine, and they protect the operator from mud and rocks.**

**BRIEF SPECIFICATIONS**

| | |
|---|---|
| Bucket capacity | 2 cu. yd. |
| Bucket reach (@ 7 ft. dump height) | 50¾ in. |
| Over-all width (bucket) | 93½ in. |
| Wheelbase | 88 in. |
| Speeds, forward (4) | 0-24 MPH |
| reverse (4) | 0-30 MPH |
| Shipping weight, with diesel engine | 20,780 lb. |
| Shipping weight, with gasoline engine | 20,440 lb. |

There's a wealth of LOADER KNOW-How behind the No. 944.
It comes from the builders of the best accepted track-type tractor-shovels in the field.

**The No. 944 is offered with a full line of versatile attachments and accessories... forks, cab (shown here), special buckets ...and the exclusive side dump bucket.**

**Every feature of the No. 944 is designed for efficient work. Ample horsepower... finger-tip shifting... smooth, fast bucket action... outstanding operator comfort and safety. The result... a bold new wheel loader... the Cat No. 944 Traxcavator.**

**Versatile** DiesELectric® **Crane** unloading pulpwood.

## Only AMERICAN Gives You this Exclusive Line

# ON CRAWLERS...ON RUBBER...ON RAIL

## Whatever your demands, American Off-Track...On Track Cranes assure you of top pulpwood handling production

Here is American Dependability at its best . . . boosting production on *any* kind of pulpwood handling job. You can always count on the full line of American Crawlers, Truck and Self-propelled Cranes on the ground—Locomotive Cranes on Rail—to give you maximum effort in every type of work. Serving the pulpwood industry for over three-quarters of a century, American equipment is now better than ever . . . better than *any*. Write us for complete detailed and illustrated catalog information.

**Stockpiling Pulpwood**
with a 700 Series
American Crawler Crane.

**Keeps Trucks Moving:**
American 300 Series
Self-propelled Crane.

**AMERICAN HOIST**
and Derrick Company
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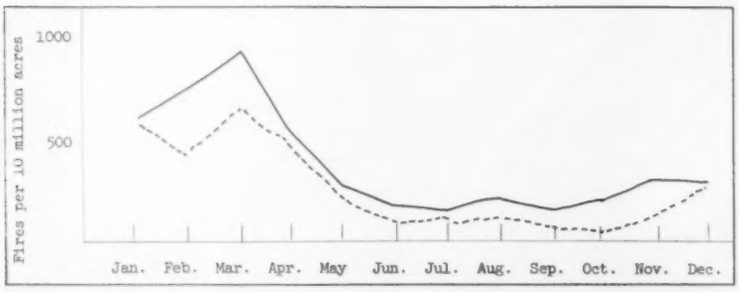
CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

EXCAVATORS-CRANES to 2 yds.-60 tons
LOCOMOTIVE CRANES to 130 tons

DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons




**MONTHLY FIRE OCCURRENCE per 10 million acres protected for State of Georgia. Solid line is average occurrence April 1951 through March 1958. Dotted line is actual occurrence in 1959.**

## 1959 Mild Fire Weather in Georgia

Daniel W. Krueger, supervising fire weather forecaster, Southeastern Forest Experiment station, reports that 1959 was another mild fire weather year in Georgia, one of the nation's biggest pulp producing states.

January was almost a normal fire month both in fire occurrence and in fire expectancy as indicated by applying a regression equation developed by Mr. Krueger to the monthly mean values of maximum temperature and 1:00 P.M. relative humidity observed at the Weather Bureau Airport Station at Macon, Ga.

February through November were all below the 7-year average (April 1951-March 1958) of both fire occurrence and fire expectancy. In December fire expectancy and occurrence were both about equal to the average for the month again.

In 1959 there were 6422 fires in Georgia, or only 67% of the 7-year average fire occurrence and 93% of the number expected from applying the equation to the Macon weather records. The 7% fewer fires than expected in 1959 is almost identical with the results in 1958 and appears to indicate that the state's fire prevention efforts are continuing to be effective.

## St. Regis Acquires Lands in South

Simultaneous announcements have been made today by Roy Ferguson, chairman of the board of St. Regis Paper Company in New York, and L. O. Crosby, Jr., Picayune, Miss., that long term agreements between the two parties covering approximately 27,500 acres in southeastern Mississippi have been entered into.

St. Regis will control and actively manage the lands and will purchase forest products from the lands during the life of the contract. An extensive reforestation program has been agreed upon and is under way on the Crosby Forest.

In addition, Mr. Crosby stated that he and members of his family are negotiating with the company for arrangements on an additional 112,500 acres in Mississippi and eastern Louisiana.

"It was after considerable thought that I made the decision to place my land under the management of the St. Regis Paper Company. I have investigated their forest practices and have found that they are doing a very fine job in land rehabilitation in areas where they are carrying on forestry work," he said.

"We are extremely pleased to have worked out with Mr. Crosby and the members of his family, agreements where we can work to put these lands into full production," said Albert Ernest, vice president of St. Regis in charge of Southern woodlands. This acquisition adds to the approximately 1,125,000 acres of land which St. Regis already owns or controls in the South.

### Aspen Makes the Grade

Regarded largely as a weed tree just a few years ago, aspen is now front and center—at least at the Univ. of Michigan, Ann Arbor, where Dr. Robert Zahner is launching a two-year study of its growth habits.

### Dr. Hall Heads Wood Study Group in West

A project is under way to determine and compile basic characteristics of commercial woods grown in the Pacific Coast and Intermountain states.

Timber Research Committee—which was set-up by industry representatives last November and has set up headquarters at Portland, Ore.—is sponsor. Dr. J. A. Hall, director at U. S. Forest Products Laboratory, Madison, Wis., prior to retiring last summer, has been engaged as industry representative. He was instrumental in carrying out a similar program in Southern states. Associated with Dr. Hall as steering committee members are Larry Lundquist, International Paper Co., Longview, Wash., and Ehrman Guistina, Guistina Lbr. Co., Eugene, Ore.

The project envisages collecting and examining about 36,000 wood samples representing western forests. Field work is to be conducted through the Pacific Northwest, Intermountain & California experiment stations. Final analysis of wood samples is to be done at Forest Products Lab.

### Big Advances Seen For Fertilizers

Fertilizers have brought spectacular advances to agriculture during the past 25 years. They'll do the same for forestry in the next 25, according to Dr. C. T. Youngberg, forest soils scientist at Oregon State College.

Research shows that fertilizers offer great possibilities for increasing tree growth, stimulating cone and seed production and getting seedlings off to a strong start. Dr. Youngberg points out that European countries—hard pressed for adequate timber supplies—have been using forest fertilizers 50 years.

#### Research Underway

Research is now underway at Oregon State on tree nutrition and forest soil fertility. The work will provide basic information as a guide to future Northwest fertilizer programs.

In many places economic factors are against use of fertilizers now, but the great demand seen for wood fiber as the population increases will alter that balance, Dr. Youngberg believes.

Studies by Weyerhaeuser Co. and the Industrial Forestry Assn. have shown that nitrogen fertilization of young Douglas fir increases cone and seed production. Crown Zellerbach Corp. has developed fertilizer pellets that are used to advantage at planting time to give new seedlings a boost.

# SULPHUR

## *Practical Guidance on the Handling, Storage and Use of Sulphur—*

# SOLID OR MOLTEN

I — The Sulphur Industry
II — Shipping Molten Sulphur
III — Handling and Storage of Molten Sulphur
IV — Analysis of Sulphur
Appendix — Physico-Chemical Properties of Sulphur

Old hands, accustomed for years to handling Solid Sulphur, will need little advice, if any...unless Molten Sulphur is to be in the picture for the first time. In this case, our experience with and knowledge of Molten Sulphur may be helpful.

But new plants entering the Sulphur-consuming picture for the first time should find our service of considerable help regardless of the kind of Sulphur used. One facet of this service consists of a well-documented and well-illustrated 5 section Manual covering all phases of the handling, storage and use of Sulphur, both solid and molten, plus useful information on sampling, analyzing, and broad properties of Sulphur.

As a preliminary to any service in person you may require—and which we shall be glad to provide—would you like to have a copy of this Manual? Please write us on your company's letterhead and address your request to our Sales Department.

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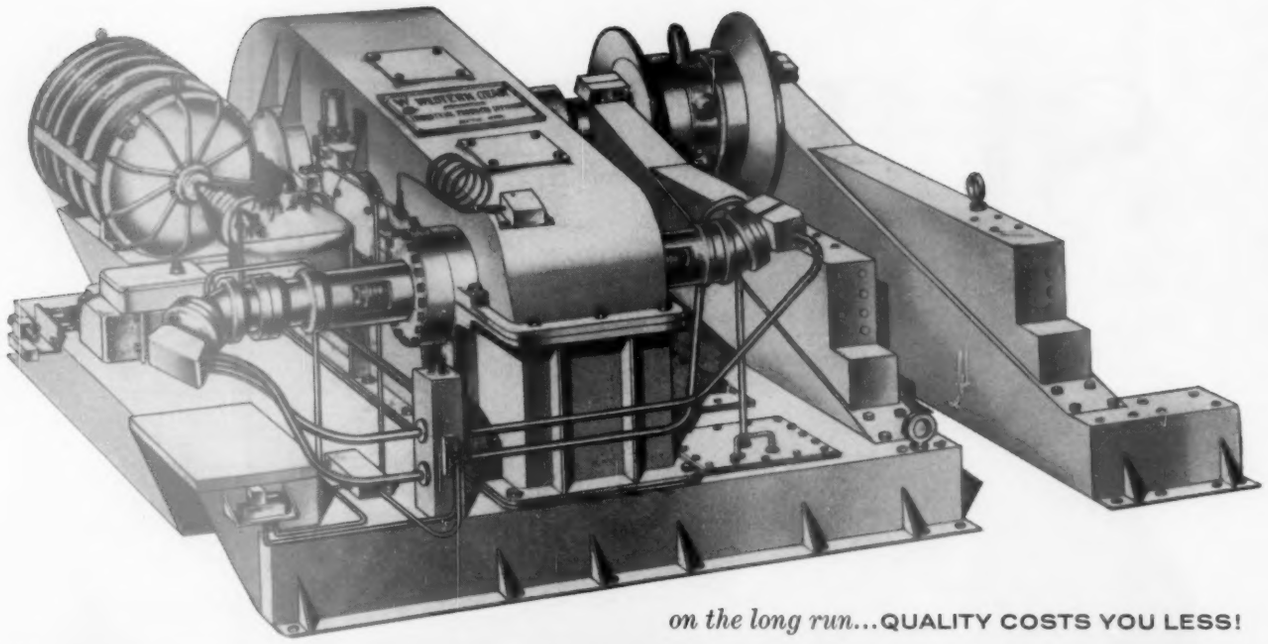
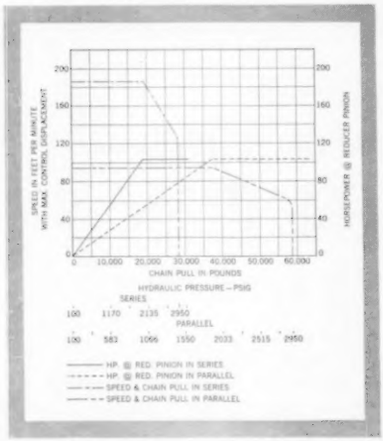


*on the long run...* **QUALITY COSTS YOU LESS!**

## ANOTHER **WESTERN GEAR** "FIRST"...ELECTRO-HYDRAULIC LOG HAUL DEVELOPED FOR ALASKA LUMBER & PULP COMPANY

The electro-hydraulic log haul pictured here, unique among the 175 gear drives supplied for the new mill embodies a new concept developed by Western Gear engi-




**Operational requirements were:**
48 ft. of rise in 220 ft. of haul; maximum chain pull not less than 50,000 lbs. nor more than 65,000 lbs; haul 200 ft. of 24" diameter logs at 120 ft. per minute.

Extra measures of quality that made this design the most practical and economical choice over all other log haul drives are:

**1. Infinite speed variation** from 0-185 FPM permits continuous maximum mill flow regardless of variable debarking time.

**2. Horsepower Limiter Control** automatically adjusts for maximum preset horsepower to allow full capacity operation regardless of load.

**3. Absence of shock loads.** Electric motor runs continuously, softer starting of hydraulic drives eliminate major service problem.

**4. Positive Overload Protection.** High response relief valve removes pressure to motor, instantly sets fail-safe hydraulic brake.

**5. Unitized Construction** integrates base, valve components and piping into protected self-contained package, completely tested at factory.

The considerable knowledge of marine electro hydraulic deck machinery combined with their background in power transmission equipment and log haul was invaluable in the Western Gear development of this important new concept of log haul design.

Western Gear's experience in electro-hydraulics and infinitely variable speed power transmissions can solve your drive problems. For full information, write, wire or phone:

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P. O. Box 126, Belmont, California
Phone: LYtell 3-7611

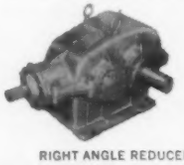
WC INDUSTRIAL PRODUCTS DIVISION

INTEGRAL GEARMOTOR

PARALLEL SHAFT REDUCER

VERTICAL SHAFT REDUCER

HIGH SPEED UNIT


RIGHT ANGLE REDUCER

# Strictly Personal

## Midwest

**Ted Kayhart** has been named mgr. of engineering for the King, Monarch and Bryant Mill divs., Allied Paper Corp., Kalamazoo, Mich.; he was formerly chief engineer for the Carolina div., Riegel Paper Corp. . . . Minnesota Mining & Mfg. Co. has appointed **Richard J. Baken** plant mgr. at the Hartford City (Ind.) Paper div.; he was previously duplicating products production supt. . . . **Fred Campbell Jr.**, area mgr. at Indianapolis, becomes mgr. of the southern Ohio district of Nalco Chemical Co., headquartered at Dayton. . . . **Harold A. Bendixen** moves up from vice pres. and gen. sales mgr. to senior vice pres. of Clinton Corn Processing Co.; succeeding him at Clinton, Iowa, is **Alfred C. Junge.**

**Harold H. Wegman** is new director of industrial and public relations at Howard Paper Mills Inc., Dayton, Ohio. . . . Development of Clupak was the subject at the January meeting of Ohio TAPPI in Middletown; principal speaker was **Julius H. Mappus Jr.**, supervisor of control laboratory and Clupak paper development for West Virginia Pulp and Paper Co. . . . **Maynard D. Conklin** and **Spurgeon Barndt** are elected vice presidents of Champion Paper Specialties Inc., Piqua, Ohio subsidiary of Champion Paper & Fibre Co.; Mr. Conklin continues his duties as treas. of the parent firm, while Mr. Barndt will continue to coordinate marketing for Champion Paper Specialties' products.

**Marvin W. Swaim**, president of Alton (Ill.) Box Board Co., has been named a director of the First National Bank in St. Louis. . . . **John Kirst Jr.** is an instrument engineer in the engineering and power offices at Nekoosa-Edwards Paper Co., Port Edwards, Wis.; replacing him as foreman of the Nekoosa mill power dept. is **Erwin Vehrs.** . . . **Otto J. Korth**, sales representative for technical papers, Kimberly-Clark Corp., becomes sales engineer for Appleton Machine Co. . . . **Peter W. Miller** is new sales mgr. at the Caldwell (Chicago) plant of Link-Belt Co.; formerly mgr. of product sales, he succeeds **Hubert J. McCormick**, who now specializes on sales of package handling.

**Robert K. Prince** has retired after 17 years with Allis-Chalmers Mfg. Co.; he was most recently consulting engineer in the pulp, paper and general process section of the Electrical Application dept.; Mr. Prince was asst. to the president of Pulp Bleaching Co., Orange, N. J., from 1936 to 1940 and later was with D. J. Murray Mfg. Co. . . . In Michigan mill circles. PIMA Ladies Night will be held April 23 at the Hotel Harris, Kalamazoo; **Paul Pringle**, Beloit Iron Works sales representative, will be toastmaster. . . .

Topic for discussion at the January meeting to Chicago TAPPI was, "Knowing Adhesives Means Improved Production"; speakers included **Dr. Eric Heinrich**, H. B. Fuller Co.; **Charles Murphy**, Morningstar-Paisley Inc., and **John Coffey**, National Starch & Chemicals Corp.

### Bert Cooper Goes Into New Field

**Bert H. Cooper**, 71-year-old retired vice president and purchasing agent for Kalamazoo Paper Co., and one of this industry's most widely known leaders, plans to "wear out, not rust out."

He has started a brand new career as special representative of the U.S. Paper Supply Co., of 600 South Michigan Ave., Chicago, and will have his own office at 604 American National Bank Building, Kalamazoo, Mich. This company is a major supplier of waste paper to mills which use this raw material. Thus, his new career will be "at the other end of the table" from the seat he occupied for so many years.

Incidentally, his successor as purchasing agent at Kalamazoo Paper Co. is **Bert Woodruff.**

Bert Cooper has been working at the Kalamazoo Paper Co., and its predecessor company (Riverview Paper) for 48 years. He had been v.p. in charge of purchasing for many years. He has just been re-elected chairman of the advisory committee for the paper school at Western Michigan University and he personally has had much to do with this school's great success. He has been a leader in many community activities in Kalamazoo, including fund-raising. The Coopers have five sons—two are teachers, one a surgeon, and two teen-agers are still growing up.

Mr. Cooper started his career as a bookkeeper, and his advice to a young man: "It's a good spot to work up from. You get a better overall picture in bookkeeping."

### Frank R. Hamilton Joins Bergstrom Paper Co.

Appointment of Mr. Hamilton as paper mill production manager is announced by **Foster P. Doane, Jr.**, vice-president for production at Bergstrom, Neenah, Wis. Mr. Hamilton recently resigned as director of research and development for Simpson-Lee Paper Co., Everett, Wash. He received his b.s. degree in chem. engineering in 1937 and m.s. degree in 1938 from the University of Michigan and began his paper career in 1938 in the technical dept. of Allied Paper Mills, Kalamazoo, Mich. He was technical director and later supt. at Allied. Joining Simpson in 1951 as technical director, he became general supt., production manager, and lately director of research and development for Simpson-Lee. He just completed two years as chairman of the Pacific Coast division of PIMA.

**Robert K. Stolz** **John L. Wilson**

### Packaging Corp. of America VP's

Mr. Stolz is appointed to the new position, vice president-forward planning and Mr. Wilson, vice president-research and development, announces WALTER S. GOODSPEED, executive committee chairman of Packaging Corp. The new company was formed recently by the merger of American Box Board Co., Grand Rapids, Mich., Central Fibre Products Co., Quincy, Ill., and Ohio Boxboard Co., Rittman, O.

Mr. Stolz, also a director of Packaging Corp., was vice president of finance and treasurer at American Box Board where his career began in 1934 as credit manager. Mr. Wilson formerly was vice president of marketing, American Box Board and held key positions in sales and plant management. His career with the company dates back to 1932.

PULP & PAPER

# Strictly Personal

**John Stevens** and **Leo E. Croy** have retired from Marathon, a division of American Can Co., Menasha, Wis. Both men are widely known in pulp and paper. For the past year Mr. Croy has been vice pres. in charge of special projects, while Mr. Stevens served as chairman of Marathon Corp. of Canada Ltd. and president and gen. mgr. of Marathon Southern Corp. . . . **Henry Bongers,** formerly with Sutherland Paper Co. in Kalamazoo, Mich., and most recently supt. at Fort Orange, N. J., has returned to the Kalamazoo Valley as supt. of MacSimBar Paper Co., Otsego. . . . **Hugh J. Hotz Sr.** has rounded out 36 years with S. D. Warren Co.'s Central div. (and predecessor firms) in Muskegon, Mich.; now in charge of special technical services and laboratory work, he has held various positions in Muskegon—including that of production mgr. for old Central Paper Co.

## Halliday, Vice Pres. of Boise Cascade

ROBERT W. HALLIDAY becomes vice pres. of Boise Cascade Corp., Boise, Idaho. He continues to hold the position of comptroller.

**Earl A. Erich** is vice pres. of Tube Turns Plastics Inc., Louisville, Ky. . . . **Frank Root,** special paper mill representative for Clinton Corn Processing Co. in Ohio and Michigan, retired December 31; his responsibilities have been transferred to the Cincinnati office under the direction of **J. C. Alderson,** district mgr. . . . **Bertram J. Milleville,** director of engineering and research, is named vice pres. of engineering and research, Ohio Injector Co.

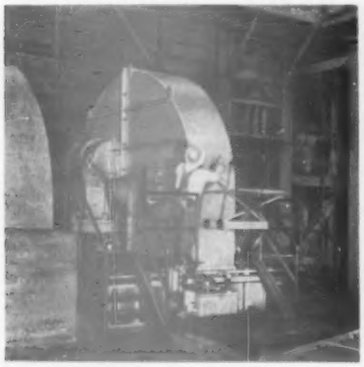
Crain ..... Ratliff ..... Gaffney

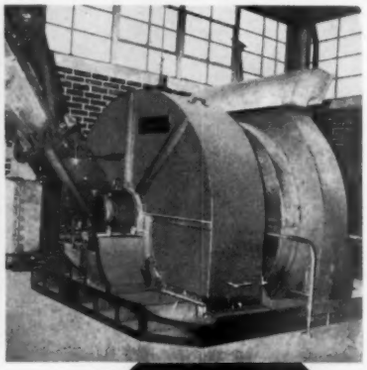
## Crain in New Post for Rhinelander Paper

DR. RICHARD C. CRAIN has been named technical director of Rhinelander Paper Co., Rhinelander, Wis., a division of St. Regis Paper Co. In other appointments, DR. FRANCIS RATLIFF becomes research director and JOHN GAFFNEY mgr. of the Technical Service & Product Development dept.

Dr. Crain came to Rhinelander in 1954 as research director. He had previously been gen. supt. for Columbia River Paper Mills, Vancouver, Wash. He holds a Ph. D. degree from the Institute of Paper Chemistry. Dr. Ratliff joined the firm's research dept. in 1957 and had previously served as paper mill research and technical director for Personal Products Corp. He also is a graduate of the Institute. Mr. Gaffney came to Rhinelander in 1940 as a paper chemist, was made asst. technical director in 1952 and technical control supt. in 1954.

Recent additions to the Rhinelander technical staff include JOSEPH A. BOYLE, who becomes a project chemist in the plant control laboratory, and ROBERT F. SWEITZER, chemist in the research dept.



**BETTER CHIPS means BETTER cooking YIELD**

- MADE IN DISC DIAMETERS FROM 36" TO 153".
- COMPACT, MURCO ROUND LOG PULPWOOD CHIPPERS REQUIRE LESS FLOOR SPACE.

MURCO Round Log Pulpwood Chippers are designed to include the most desirable features for today's production requirements . . . the result of long and careful study of the various features that contribute to outstanding chipper performance in producing more and better chips at less cost . . . less sawdust, fewer slivers, freedom from repairs yet at the same time having production records of 100 cords or more per hour. The MURCO heavy design construction reduces vibration.

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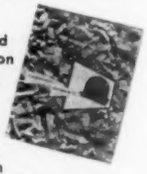
MURCO UNI-CHIP is furnished "when specified" on all new MURCO Chippers — or your present MURCO Chipper can be adapted to it.

**MURCO ROUND LOG PULPWOOD CHIPPERS**

**WRITE for MURCO Chipper booklet.**



A complete and detailed story on pulpwood and wastewood chippers . . . specifications of each model . . . yours upon request. Write for it today.

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# Buyer's Memo to Himself:

*Need experienced supplier*

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Over 50 years of service to the industry is your assurance that Marathon knows what it takes to supply the needs of the converter with better materials for better end products. A highly instrumented operation assures constant, foolproof quality control . . . and product uniformity.

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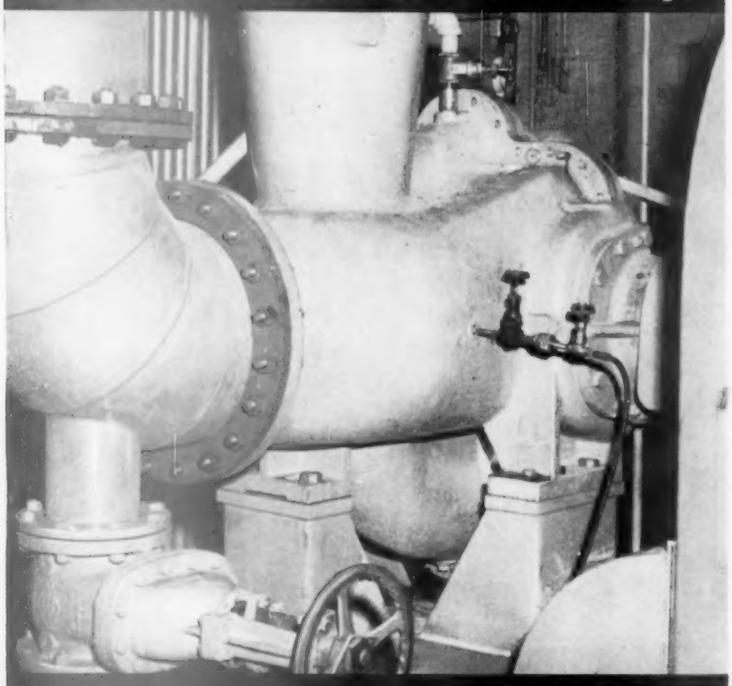
## Another WARREN Fan Pump



## .....an unusual installation

One of the two WARREN type 18-DB-32 double suction dual volute fan pumps installed at St. Regis Paper Co., Bucksport, Maine . . . an unusual fan pump installation. Notice the side mounting of this bottom suction unit. This specially engineered mounting helped cut piping costs and saved valuable floor space for St. Regis. And because the pump cover can be moved off oversize dowel pins in a horizontal plane, rather than lifted off, the side mounting offers especially good accessibility for a pump of this size. Many such special arrangements are available from Warren.

Here are some of the companies that are using Warren Fan Pumps

**DIERKS PAPER CO.**
Pine Bluff, Ark.
24-DB-22—16,000 GPM at 30 ft. head

**FIBREBOARD PAPER PRODUCTS CORP.**
Antioch, Calif.
(6) 20-DB-22—13,000 GPM at 39 ft. head

**GULF STATES PAPER CORP.**
Demopolis, Ala.
16-DB-20—10,000 GPM at 155 ft. head

**HUDSON PULP & PAPER CORP.**
Palatka, Fla.
20-DL-22—12,500 GPM at 80 ft. head

**ST. REGIS PAPER CO.**
Bucksport, Me.
(2) 18-DB-32—12,500 GPM at 200 ft head

WARREN

CENTRIFUGAL SCREW RECIPROCATING GEAR

**WARREN PUMPS, INC.** WARREN, MASSACHUSETTS

PP-44


. . . **Frank Volm** becomes sales engineer for Paper Converting Machine Co., Green Bay, Wis.; he was formerly plant engineer in Menasha (River St., plant) for Marathon, a division of American Can Co.—**Don W. Ziegler.**

### Nekoosa-Edwards Promotes Two in Technical Dept.

**Vernon C. Iverson,** technical control supervisor at Nekoosa, is named technical asst. to the paper mill. His success at Nekoosa is **Edwin F. Fischer Jr.,** formerly Port Edwards technical control supervisor and chemical engineer.

Mr. Iverson joined the firm in 1951 as a research chemist. Mr. Fischer was on the technical staff of Gilbert Paper Co. before joining Nepco in 1955 as a research engineer.

At the same time, Nekoosa-Edwards announced appointment of three foremen at Port Edwards: **Arnold J. Driscoll,** maintenance scheduler, becomes maintenance foreman; **Donald L. David,** relief foreman, is named finishing dept. foreman, and **James P. Pazurek** is new shipping foreman.

### Russian, Other European Mills, Subject of Talk

Visits to a Russian mill and the Central Pulp and Paper Research Institute of Russia, as well as interviews with top pulp and paper planners of the State Planning Commission in Moscow, will highlight a talk by Albert W. Wilson, editor of PULP & PAPER and PULP & PAPER INTERNATIONAL, at a luncheon for members and guests of the Valley Industrial Salesmen's Association (VISA) on Monday, Apr. 4. It will be in Appleton or Neenah, Wis.

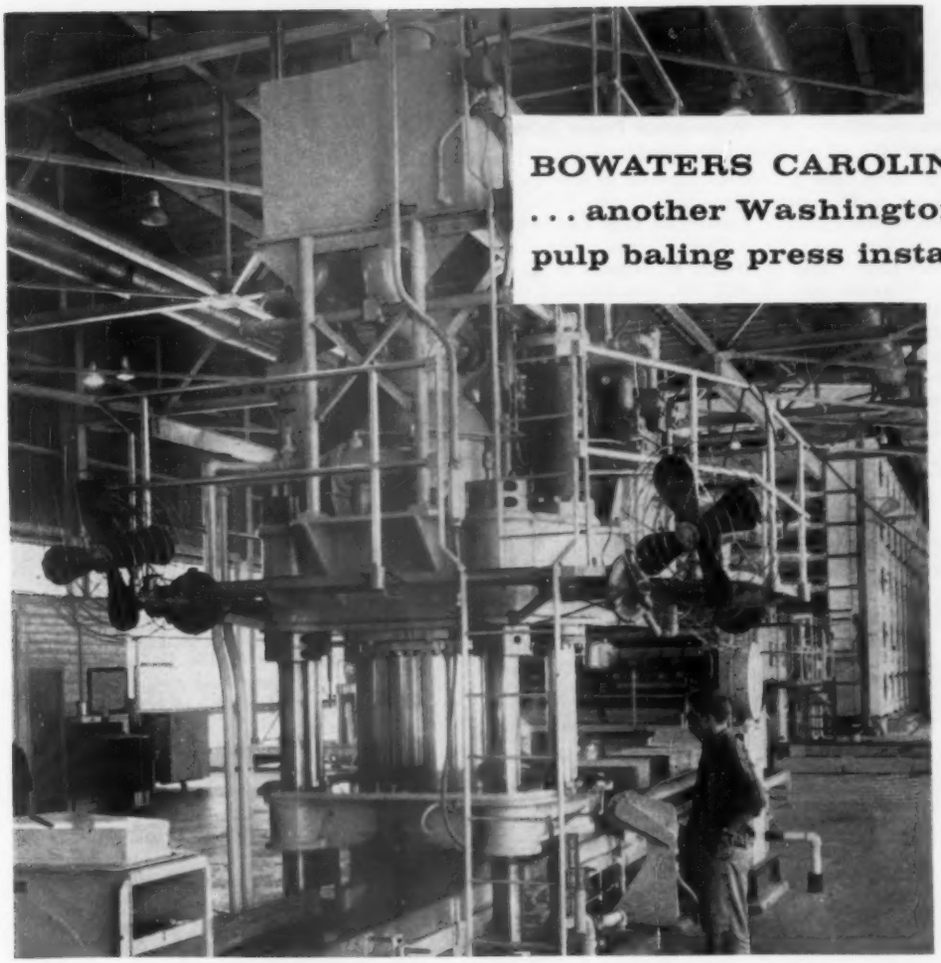
Mr. Wilson also will discuss industry operations and trends in 12 other European countries which he visited during three months abroad.

### C. J. Liebman, Technical Sales Service, A-B Corn Products

Larry Liebman has stepped into a key position in the Bulk Corn Products div. of Anheuser-Busch Inc., St. Louis supplier of starches, etc. The post was vacated by the retirement of **Ken Battenfield.** Mr. Liebman has been 14 years with A-B and was Mr. Battenfield's assistant. Mr. Battenfield, incidentally, has acquired property in Acapulco, Mexico, for his retirement years.

### Appleton Course is Open

The Institute of Paper Chemistry will conduct its 16th annual Fiber Microscopy Course for a maximum of 30 representatives of the pulp and paper industry at Appleton, Wis., March 28-April 8. The course will be taught by **Dr. I. H. Isenberg.** Write for reservations.



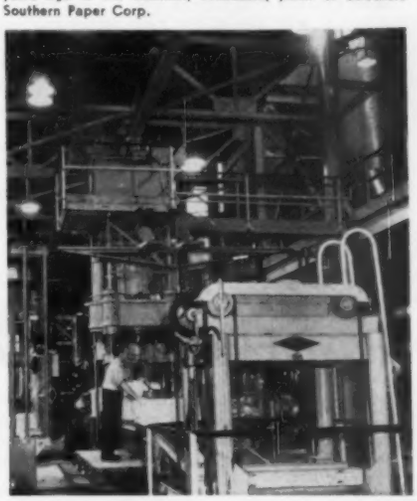
## BOWATERS CAROLINA CORP.
## . . . another Washington-built pulp baling press installation

With the opening of the $38 million Bowaters pulp plant at Catawba, South Carolina, Washington-built pulp baling presses are operating at both of the Bowater organization's plants in the United States. At the new plant, some 400 tons per day of sulphate unbleached and semi-bleached pulp are compressed under 815 tons of pressure by the Washington press, wrapped and baled for shipment to paper mills.

Follow the example of leading pulp producers like Bowaters, and include Washington press economy in your baling room plans. Washington pulp baling presses, in capacities from 600 to 1600 tons, provide assurance of efficiency and dependability. Write to Washington Iron Works, 1500 Sixth Avenue South, Seattle 4, Washington.

Above, this Washington 815-ton press handles 400 tons daily of pulp from Southern Pine at Bowater's new Catawba mill, the company's second in the United States.

Below, a similar 600-ton Washington press installed several years ago in the Calhoun, Tennessee, plant of Bowaters Southern Paper Corp.



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**WASHINGTON PRESSES**

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COMPLETE DRY PROCESS HARDBOARD FORMING LINE EQUIPMENT

PULP & PAPER

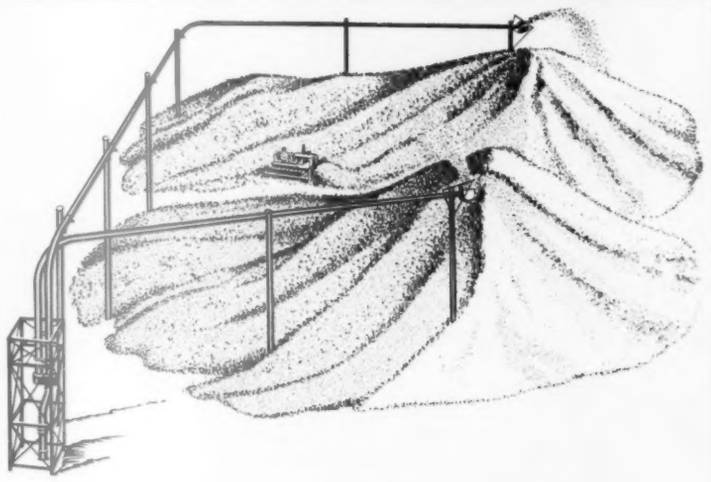
# Strictly Personal

### Robert Shaw Joins Vanderbilt; Will Set Up Housekeeping

A native of Kalamazoo, Mich., and a paper technology graduate of Western Michigan Univ., he is new representative for R. T. Vanderbilt Co. Inc. (suppliers of titanium dioxide and other papermaking products) in Michigan, Wisconsin and Minnesota. He was previously research chemist for Watervliet Paper Co. and on April 30 will wed **Miss Darlene Webb**, secretary at the Watervliet plant office. They will live in Kalamazoo.

### Waterproof Paper Assn.

The Waterproof Paper Manufacturers Assn., Inc. held its annual meetings at the Edgewater Beach Hotel, Chicago, in January. **Mr. R. B. Vogt** of Thilmany Pulp & Paper Co. was reelected president and **Robert W. Hannah** of Albemarle Paper Mfg. Co. was reelected vice president. Three new directors were elected: **Floyd F. Newkirk**, American Sisalkraft Corp.; **Robert H. Wood**, Simplex Paper Corp. and **Stanley G. Yount**, Southland Paper Converting Co., Div. of Fortifiber Corp. **Dernell Every** and **T. K. Heston** were reelected secretary-treasurer and assistant secretary-treasurer, respectively.

WALDORF PULP AND PAPER COMPANY SELECTS RADER PNEUMATIC CONVEYORS

This Rader Pneumatic conveying system receives chips from a truck and rail car unloading pit. Chips are currently being blown through two ports of a four-way valve to outside storage. The other two ports will eventually be used to bypass outside storage and blow directly to a conveyor going to the pulp mill. These 10" lines convey 60 tons of chips per hour for a distance of 500 feet.

Simple pole supports eliminate costly suspension structures required with old-fashioned conveyors, and with pneumatic conveying systems there are no moving parts to break or clog.

Write for complete information today!

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Box 3386, Memphis 17, Tenn.
300 1st Ave., Needham Hts., Boston 94, Mass.


### India's Industry Grows Fast, Says Dr. Aggarwala

India's paper industry is expanding rapidly and investments in India have increased in value two or three times in a matter of a few years.

This was reported by **Dr. Jagadish C. Aggarwala**, mill manager, and **N. L. Rathi**, purchasing director, of the Bengal Paper Mills, Ltd., of Raniganj, West Bengal, India.

On a trip around the world, they were interviewed by PULP & PAPER in Chicago. They had traveled extensively in Europe and in America.

Dr. Aggarwala earned his doctorate and master of science degrees at the University of Washington, Seattle, U.S.A.

## Southern

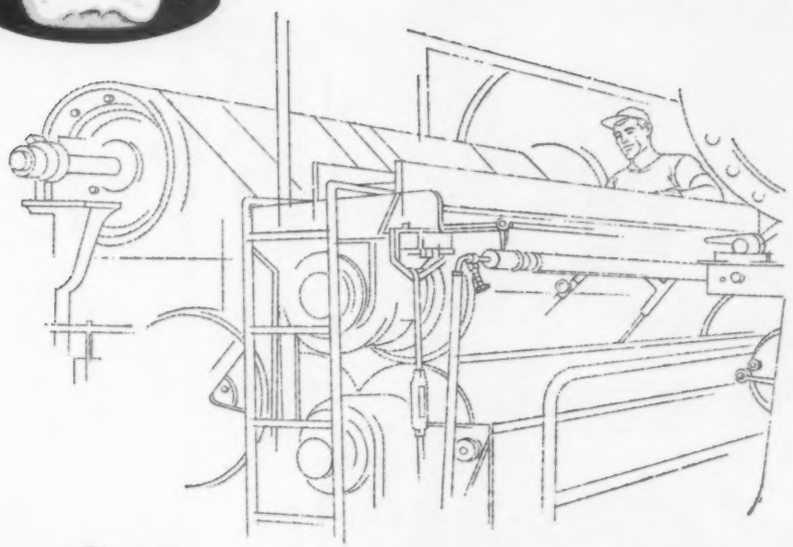
The West Point, Va., volunteer fire dept. is richer by one $9,500 fire pump truck, thanks to The Chesapeake Corp. The truck, especially built for forest fire fighting and capable of carrying six men in its cab, will be used to fight fires with a 75 mile radius of West Point. Its booster pumps will throw 350 gpm. . . . Combustion Engineering, Inc., has terminated its sales agency agreement with T. C. Heyward and Co. of Charlotte, N.C., in order to bring the company's organization in Georgia and Florida under the same policy as the rest of the country, dealing directly with Combustion's district offices.

**Sydney H. Jammes** has been appointed asst. treas. of Bowaters Southern Paper Corp., Bowaters Engineering and Development Inc., and Bowaters Carolina Corp. He joined Bowaters in 1952 after starting his career with St. Joe Paper Co.

**E. J. Kelley, Jr., Chesapeake Corp. Market Research Mgr.**

He was previously asst. to the vice pres. of Ashcraft-Wilkinson Co. of Atlanta and prior to that was operations analyst of Virginia-Carolina Chemical Corp. He is a graduate of Amherst, has masters degree in business administration from Harvard.

FROM A KERNEL OF CORN THROUGH CHEMISTRY



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ACETYLATED STARCH DERIVATIVE

## NEW STANDARD FOR SIZING

There's been a change. In surface sizing results. They're now much more uniform. Because KOFILM, a unique acetylated starch, eliminates variations in viscosity and strength. As proved in mill after mill in little more than a year.

KOFILM prolongs viscosity stability over extended periods of time. Performs cleanly in starch supply systems and on the paper machine. It offers high strength, more flexibility and excellent film forming properties. Produces uniform finishes and consistently high pick strengths. Improves oil resistance and wax hold out. And is an excellent pigment binder.

KOFILM is suggested for coating as well as sizing. It is available in a range of viscosities. Why not compare it against whatever you're now using? Write, telling us something of the use you have in mind.

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STARCH and CHEMICAL
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with **CARBO ZINC 11***

**Carboline's new zinc filled *inorganic* protective coating**

- Water-insoluble 20 minutes after application.
- All-weather application: —20° F. to 150° F., up to 100% humidity.
- All-weather service: —80° F. to 750° F.
- Excellent resistance to water, brine, high humidity and organic solvents.
- Cures from inside out . . . requires no curing solution.
- Resists undercutting and subfilm corrosion.

Carbo Zinc 11 can be used without topcoat or as primer with vinyl, Hypalon or inorganic renewable topcoat for color. Apply with brush or spray. In non-immersion service, it can be applied over a commercial blast surface. It's economical, too . . . low material, application and maintenance costs.

*Write today for complete information, technical data, uses and samples of this outstanding, easily applied coating . . . Carbo Zinc 11.*

*Patent applied for

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*Sales engineers in principal cities. Consult your telephone directory.*

COATINGS WITH EXPERIENCE

**Victor S. Luke, Mgr., West Virginia's Multiwall Bag Div.**

Following reorganization of the multiwall bag operations into full divisional status, Mr. Luke has been given responsibility in this area of company operations. He holds a b.a. in economics from Middlebury College and a masters degree in business administration (marketing) from the Wharton School of Finance & Commerce, Univ. of Pennsylvania.

. . . **Samuel W. Jenkins,** dir. of college relations and professional employment for Southern Kraft Div., International Paper Co., has been promoted to special products representative. He will direct sales and distribution of IP's new "Turfiber." . . . **Stephen Glen Ward,** graduate of the University of Arkansas and formerly with the Boeing Airplane Co., has joined Crossett Paper Mills as a mech. engr.

Three of Crown Zellerbach's onetime Pt. Townsend, Wash., men, now at Bogalusa: **W. H. Maxwell,** multiwall supt. is now product mgr. of bags and bag papers at San Francisco; **Don Nadig** has been upped from asst. to multiwall supt. and **Jack Caldwell** moves from Antioch to become asst. mutliwall supt. . . . **Jack Warner,** president of Gulf States Paper Corp., has succeeded his mother, **Mrs. H. D. Warner,** as chairman of the board of directors. . . . **E. A. Jacobs,** vice pres. and gen. mgr. of the Triangle Bag Co., has retired according to The Crossett Co., owners of Covington, Ky., business. **J. H. Allen,** office mgr. of Crossett paper mills, is acting mgr.

**New Research Director**

DR. REAVIS C. SPROULL, Richmond, Va.—research chemist and consultant, has been named director of research and development at Chesapeake Corp. of Virginia, West Point, Va. He will develop new processes and products at the kraft pulp and paper mills.

# another SF first...

# AIRBORNE pulp drying in new FLAKT® DRYER

SF FLAKT DRYER TYPE L with airborne web; in operation at BOWATERS CAROLINA CORPORATION, Catawba, South Carolina. With a capacity of 450 TPD of pulp, the dryer is remarkably small — only 104' long.

## SF FLAKT DRYER, type L

***features an advanced air distribution system. Floating on hot air jets, the pulp sheet rides like a MAGIC CARPET through the dryer. There are no mechanical conveyors.***

- LESS MAINTENANCE AND OPERATING COST. The absence of mechanical conveyors eliminates costly downtime for repairs and saves man-hours spent on upkeep.
- SMALL SIZE. Higher drying rate drastically cuts dryer size thus reducing building costs.
- HIGH OUTPUT. SF Flakt Dryer type L permits high operating speeds and can be built for any desired capacity.
- AUTOMATIC THREADING. The unit can be equipped with fully automatic threading.

*For further information please contact:*

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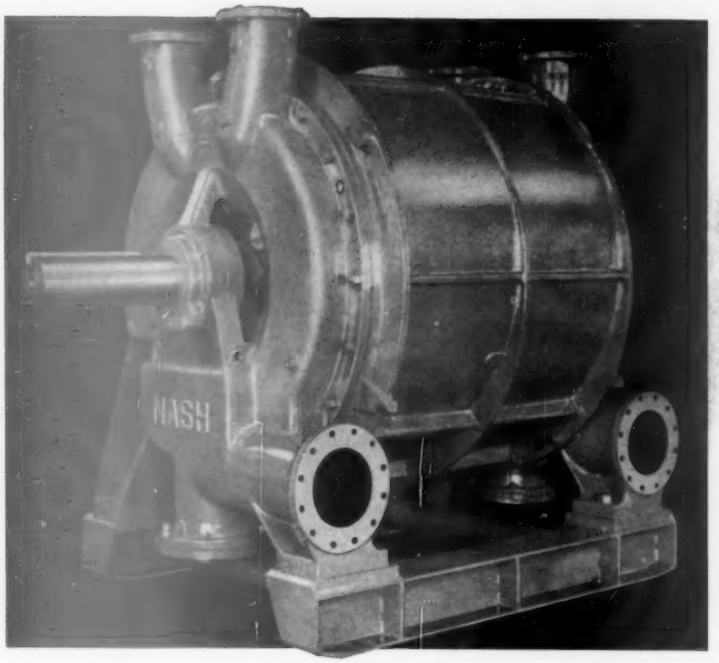
Just 3 days lost production of a Paper machine can cost more than the vacuum pumps. That makes dependability the essential factor in pump selection. No pump is more dependable than a Nash




Over a thousand leading mills depend on Nash Vacuum Pumps to insure uninterrupted production. Nash Pumps are built to stand the pounding of continuous operation. They are simple. They have no internal parts in wearing contact. They will handle slugs of water or stock. They are designed to operate at the low speeds necessary for long life and reliability. Don't gamble with your production. Install Nash Vacuum Pumps and be safe.

The new Nash 5308-A shown above, has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONN. U. S. A.

**A. J. Rourke for Chandler In Southwestern States**

Mr. Rourke is a lifelong resident of Georgia and Florida, is known to his friends as "Red", has 13 years experience selling mechanical equipment. He will represent John B. Chandler Co. in Alabama through Texas. Jack Chandler continues to service eastern coast states as exclusive agent for Scapa Dryers, Inc., Cincinnati Rubber Co. and A. P. Wagenknecht Co.

Union Bag-Camp's top echelon has undergone important changes: **A. Lawson Sopp** was elected vice pres.-finance, **Sydney J. Taylor** is secretary, **Edward D. Teston,** suceceds Mr. Sopp as comptroller and **Stanley Calder,** formerly asst. treasurer is now treasurer of the company. **Malcolm S. Black,** Secretary-treasurer, has retired after 9 years service. . . . And at Brunswick Pulp & Paper, **W. J. (Daddy) Brown** recently closed his desk as maintenance supt. after 47 years service! "Daddy" can remember when horsedrawn wagonloads of pulpwood were unloaded by hand at the mill. He started with American Box Board in 1912 and came to Brunswick in 1937.

**A. D. (Tay) Levert,** asst. to res. mgr. at Gaylord Container div.'s Bogalusa mill, has retired. He began his career with Gaylord when it was Bogalusa Paper Co. in 1925. . . . **John A. Putnam** has been appointed mgr. of the Atlanta office of U.S. Industrial Chemicals Co., a div. of National Distillers and Chemical Corp. . . . Benedict and Boggs Co., 715 South 21st St., Birmingham, Ala., will represent Planet Corp., suppliers of materials handling equipment, for Alabama.—**William F. Diehl.**

**Glyde White, Sales Rep. For Brandon Dryer Felts**

A Clemson graduate, Mr. White lives in Greenville, S.C., which is also home base for Brandon Sales, Inc.

# BLANCOPHOR®

**can make your white papers as bright as this sheet**

Blancophor HS and ES optical brighteners in your white papers create a remarkably blue-white, fluorescent finish that adds visibly to the sales appeal of your sheet. The Blancophor brighteners, in liquid or powder form, can be added either *as is* to the pulp, or in solution to the surface. Newly-developed Blancophor ES brands are particularly recommended for beater use at low pH (below 5.0 at the wire), because they are more stable. Use of Solar® tinting colors in the brightened pulp will provide a range of hues extending from greenish-blue to reddish-violet, thus making available a variety of brilliant white tints.

NOTE: This sheet has been whitened with Blancophor ES-73.

Ask for samples and complete technical information at any Antara office.

gaf gdc ANTARA

*from Research to Reality*

**GENERAL DYESTUFF COMPANY • ANTARA CHEMICALS**

SALES DIVISIONS OF GENERAL ANILINE & FILM CORPORATION

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SALES OFFICES: New York • Providence • Philadelphia • Charlotte • Chattanooga • Chicago
Portland, Ore. • San Francisco • Los Angeles. IN CANADA: Chemical Developments of Canada, Ltd., Montreal

Blancophor brighteners and Solar Colors, manufactured by General Aniline & Film Corporation, are sold outside the United States under the trade name of "Tintofen" by distributors all over the world.

PULP & PAPER

# Strictly Personal

**"What kept you so long? . . . Have trouble with the valve on #4 again?"**

### Bowater Announces Many Promotions

A long list of promotions effecting most of the top personnel at Bowaters Southern Paper Corp. became effective on January 1. Among them were promotions of **L. E. Culbertson** from resident engineer to (acting) mill mgr. and **M. J. Osborne** from electrical supt. to chief engineer. **W. J. Parson** moves from paper mill supt. to gen. supt.-newsprint and **J. K. Dyer** from sulfate supt. to gen. supt.-pulp.

Others named in the changes:—**J. N. Swartz**, from tech. dir. of Bowaters Southern to tech. dir. of Bowaters Carolina, Bowater Board and Bowaters Southern; **Sam Richardson** from asst. to prod. mgr. to asst. to the vice pres.; **Stewart Aycock** from office sales super. to office mgr.; **D. H. Fuller** from asst. to paper mill supt.; **W. C. Pierce**, from asst. to sulfate supt.; **J. E. Doeflinger**, from asst. to pulp mill supt. to asst. sulfate supt.; **E. H. Buchheit** from asst. electrical supt. to electrical supt.; **N. G. Holtz**, from asst. res. eng. to plant eng.; **R. C. MacDonald** from acting control supt. to control supt.; **G. Moisan** from statistician to senior statistician; **W. G. Grater** from senior statistician to asst. to the mill mgr.

### Dow to Expand Texas Polyethylene Capacity

Engineering has begun on new facilities at Dow Chemical Co.'s Texas Division, at Freeport, to increase production there by approximately 67%. Completion is expected in 1961.

The company last May announced doubling of its polyethylene capacity for the second time in a year with completion of a new plant at Freeport. Two other Dow polyethylene facilities at Plaquemine, La., and Bay City, Mich. are to be in production this year.

### New Landing Strip at Eastex

For convenience of flying customers and visitors, East Texas Pulp and Paper Co. has constructed a 3,000-foot, all-weather landing strip one-half mile southeast of the Evadale, Tex., mill. It is connected to the mill by a private telephone which enables incoming visitors to call for transportation. An additional 1,500 feet of cleared approach is at each end of the runway.

### John Homan Dies in Mobile

Joseph B. Homan, who represented Staley starches in the South and was a manufacturers' representative to Southern mills for many years, died recently after a long illness in Mobile, Ala. He lived in Mobile 20 years and was born 57 years ago in Pontotoc County, Mississippi. His widow, five brothers and sisters and other relatives survive.

## Northeast

**Joseph T. Loomer** has been promoted to manager of bleached board technical development for Continental Can Co. He was formerly manager of sales development for CC's Robert Gair Paper Products Group. He will concentrate on coating and allied machine fields for the development of Continental Can's new Augusta, Georgia board mill.

**Donald A. Hughes**, formerly based in Kalamazoo, Mich., for R. T. Vanderbilt Co., returns to the research labs at East Norwalk, Conn., to head up a new research program. . . . **Samuel Pruyn**, vice president, Finch, Pruyn & Co., Inc., has retired after 50 years with the company, continues as full time sales advisor.

New officers for the Connecticut Valley Division of PIMA: **Charles O. Hosterman Jr.**, Oxford Paper Co., chairman; **Peter Oliva**, C. H. Dexter & Sons, Inc., 1st vice chairman; **Richard W. Maley**, Standard Packaging Corp., 2nd vice chairman; **William F. Nye Jr.**, The Hubinger Co., secretary-treasurer and **Walter Wood**, National Aniline Div., Allied Chemical Corp., affiliate chairman.

**George E. Clink** has been upped to asst. vice president, The Sandy Hill Iron & Brass Works. . . . **Charles S. Adams** steps up to asst. vice pres., and **Floyd H. Rourke**, to asst. to the president.

**J. E. Waterhouse** has retired as president of Montague Machine Co. and continues as a consultant. **Stuart E. Kay**, formerly president, assumes this position again. **G. W. Wallenius** becomes vice president and general mgr., and **Farrell B. Johnson**, vice pres. i/c sales

Dr. **Charles W. Boyce, 66**, former executive sec. of APPA (1928-1940), died recently in Doctors' Hospital, New York, N. Y.; since 1944 he had been a consultant in the paper field, serving continuously since 1951 as consultant to the American Newspaper Publishers Assn. . . . **Dr. Howard E. Kremers**, formerly market development mgr. for the Lindsay div., becomes eastern district mgr. of market development for American Potash & Chemical Corp. . . . **Leslie S. Pearson**, mgr. of the Paper Mill div., is elected a vice pres. of Southworth Machine Co., Portland, Maine; prior to joining the firm 18 months ago, he was chief industrial engineer for S. D. Warren Co.

**Richard A. Warner** has been promoted to asst. director-industrial relations, Riegel Paper Corp. . . . **Ivar N. Hultman**, vice pres., Eastman Kodak Co., and general mgr. of the Kodak Park Works, has retired. **Clarence I. A. Wynd**, asst. general mgr., and a company v. p., succeeds him.

**Thomas J. Stiles** of Gorham, general supt. of Brown Co.'s Cascade Mill, is promoted to manager of paper manufacturing, announces **Edward H. Petrick**, vice president and general manager, Paper Division. Mr. Stiles fills a vacancy caused by resignation of **Frederick E. Macy**, and will be responsible for all paper manufacturing in Brown Company's Riverside and Cascade paper mills.

**Robert A. Bondurant Jr.** steps up as mgr., Chlor-Alkali Div., Food Machinery & Chemical Corp. . . . **Robert B. Larocque** has joined Oxford Paper Co.'s electrical dept. as electrical engineer.

THE Langston Leader
PAPER MILL EDITION
Leadership...by design
SAMUEL M. LANGSTON CO. • CAMDEN 4, N. J.
MARCH, 1960 *Published for the information of paper and board mills* VOL. 2, NO. 2

***Report on Hurlbut***

# TWO NEW WINDERS ON FINE PAPER WORK

## Operations Produce Sheets Without Surface Scratches For Specialty Paper Field

Two new Langston winders are doing a good job on fine papers at the new Laurel Mill in South Lee, Mass., of Hurlbut Paper Company, a subsidiary of The Mead Corporation.

Both 112-inch wide machines, one is behind the paper machine and the other in the finishing room.

### Wide Range of Papers

The paper manufactured by Hurlbut at this mill includes a wide range of fine papers in the specialty field, such as saturating papers for decorative laminate purposes in the furniture field, electrical laminates and high heat insulation.

It also includes various filter papers for aerosol and liquid filtration, photographic use, and special papers for the automotive industry, and for government defense unit needs.

It is a prime requirement that most of these sheets be free of any surface scratch marks or matting of fibres.

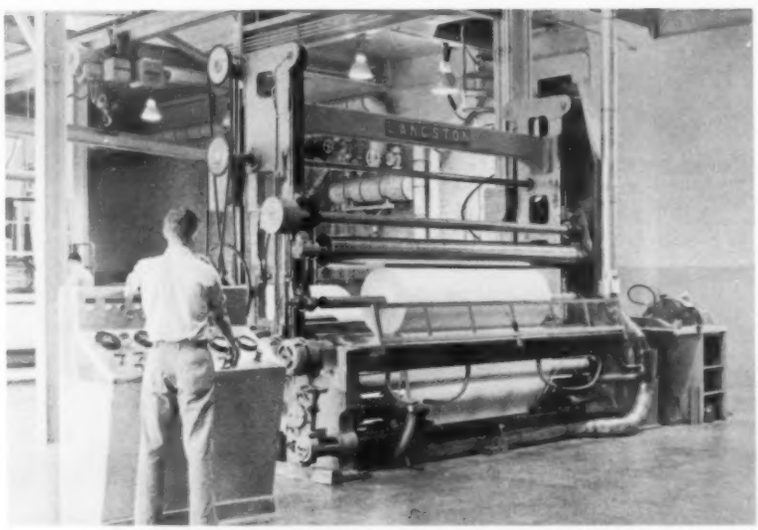
### Constant Sheet Tensioning

Grades run on the winders range from 25-lb. to 125-lb. (24 by 36—500 basis). Rolls may vary from 105-inch widths down to 30-inch widths on the rewinder.

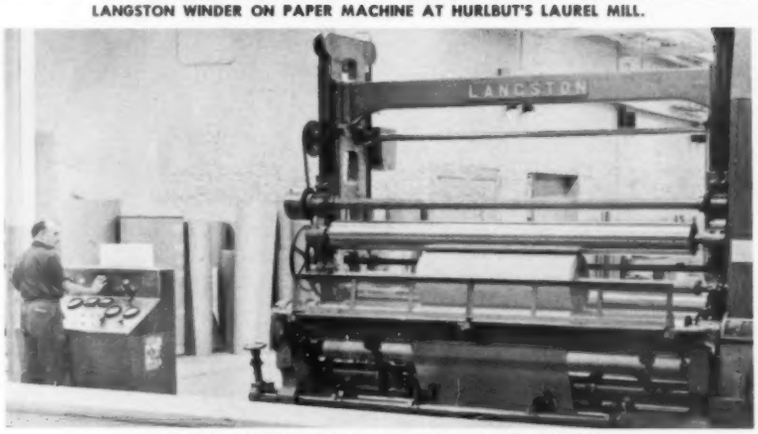
The paper machine winder is equipped with automatic constant sheet tensioning.

"The automatic constant tension control," says Leon P. Tisdale, Plant Superintendent, "can be credited in large part for the good rolls we have been producing. The equipment has worked out well in our operation."

The rider roll arrangement, in particular the controlled torque drive, is easily adjustable to suit varying grades of paper being run and permits the operator at his console to select the amount of rider roll drive effort desired for production of good quality rolls.




LANGSTON WINDER ON PAPER MACHINE AT HURLBUT'S LAUREL MILL.




OPERATOR, IN HURLBUT FINISHING ROOM, REWINDING ROLL.

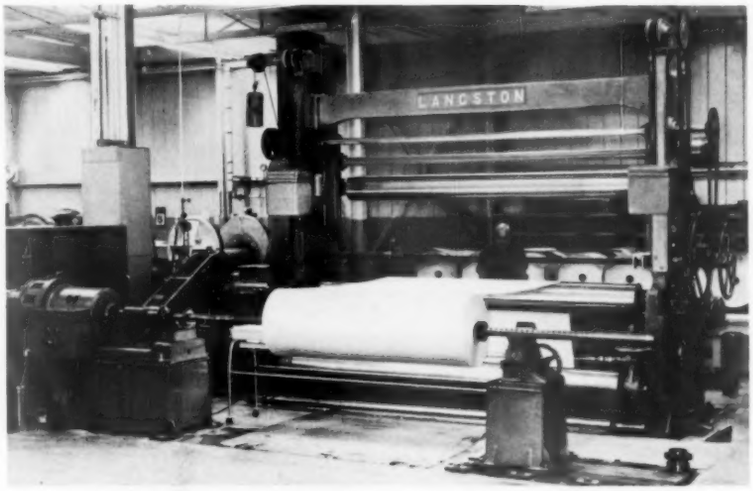
### Clean Separations

The rotating-type, cambered spreader roll is positioned to lead the sheet onto the rewind drums and assure clean separations. This spreader arrangement permits precision, clean cut slitting and eliminates scratch and score problems so often encountered with fixed-type spreaders.

Operators like the automatic roll ejector. It makes the work easier and permits quicker roll changes. Also simplifying the job is the gang arrangement of the shear cut slitters for faster setup. Operators like being able to handle all controls from the one

*(Continued on Page 2)*

**CLEAN SEPARATION** and superior quality of roll are noted by Plant Superintendent Leon P. Tisdale as operator looks on.




**BACKSTAND IN FINISHING ROOM** shows extended sole plate which is adjustable to various reel widths as required.

# Two New Winders

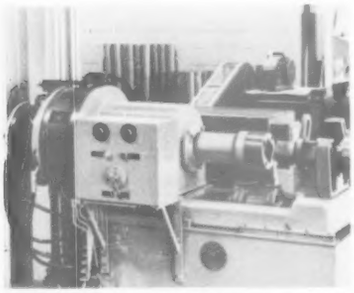
*(Continued from preceding page)*

console, including lateral adjustment of the unwind stand.

## Field Weakening Drive

In the Hurlbut operation, the paper machine can run at speeds ranging from 100 feet per minute on heavy papers to 600 fpm on light with the winder operating three to four times faster. Generally, two, three or four rolls are slit and rewound from the 105-inch reel.

Because of the wide range of papers contemplated, it was felt practical to limit the winding of heavy papers to a top speed of 1000 fpm, while still being able to wind lighter weight papers at speeds up to 2000 fpm.



**TANDEM BRAKING** arrangement and hydraulic closure for reel shaft coupling is shown in closeup.

**SETUP** on shear cut slitters is made by winderman.

This is accomplished by the paper machine winder drive which utilizes field weakening control, giving constant torque from 0 to 1000 fpm and constant horsepower from 1000 to 2000 fpm.

## Tandem Braking

The backstand utilizes a tandem-type braking arrangement. This allows use of one brake for light tensions, one for heavier, while the other is disengaged. Also, where required, both brakes can operate in conjunction. The brakes are pneumatically operated and incorporate thermostatically controlled water cooling.

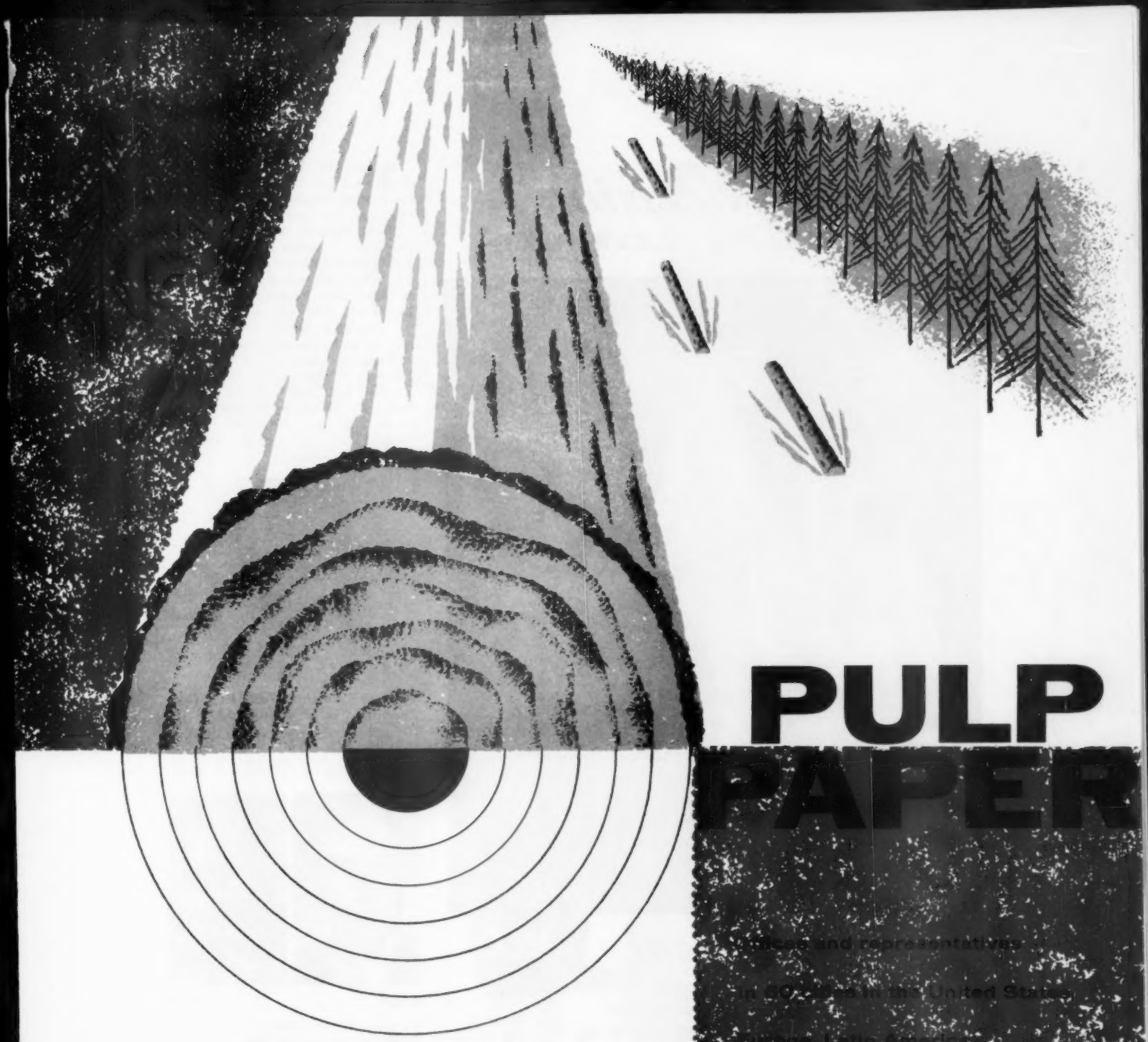
Because of the range of required tensions, widths of rolls and machine speeds, the winder is so equipped that the operator can easily select by push-button controls the range of sheet tension—heavy, medium or light—that he desires.

The Langston system for automatic tension control is effected through a transmitter mounted on the winder frame. The transmitter receives a sheet tension load indication from a winder-mounted idler roll. The transmitter in turn automatically maintains the tension setting established by the operator.

## Quite Satisfactory

"Although we haven't met every condition we expect to meet," says E. K. Bancroft, Director of Engineering, "the braking system appears quite practical and from what we've seen, quite satisfactory."

As for the finishing room rewinder, a speed of 1000 fpm is provided, sufficient for the size rolls handled at Hurlbut's Laurel Mill and when required, permitting visual inspections of the paper at slow speeds. For operation at these speeds, manual brake control has proved adequate for turning out good rolls.



# PULP
# PAPER

[illegible] and representatives
[illegible] in the United States,
[illegible], Latin America,
[illegible]

## BULKLEY DUNTON

ORGANIZATION

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BULKLEY DUNTON PULP CO., INC. • BULKLEY DUNTON & CO., INC.
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STOCKHOLM • BULKLEY DUNTON PAPER (FAR EAST) CO., INC.
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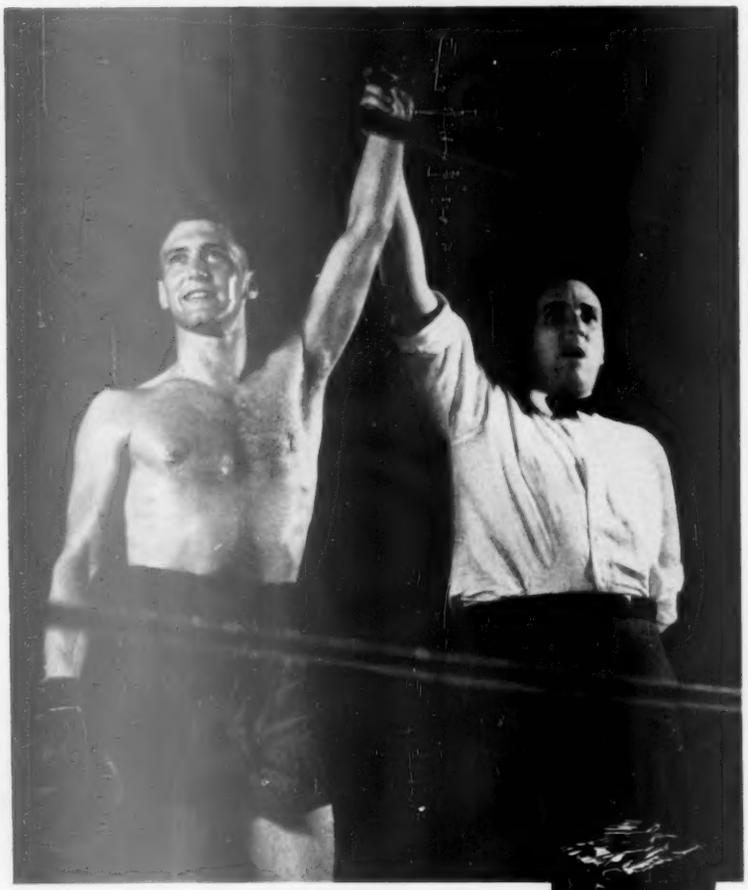
In New England—CARTER RICE STORRS & BEMENT

IT'S *the decision* THAT COUNTS



*...with a fuel, too!*

B&O bituminous merits your winning decision for sensible plant operating reasons. (1) Volume supply in wide variety is a sure bet to outlast current competitive fuels. (2) Sources are nearest to major consumption—always dependable. (3) Mining and burning developments continually tailor bituminous to greater efficiency. Bet on B&O Bituminous! ***Ask our man!***

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BALTIMORE & OHIO RAILROAD
*BITUMINOUS COALS FOR EVERY PURPOSE*

**Mr. and Mrs. Vic Coudert** (he's with Northeast Paper Sales, Inc., sales reps for Dryden, Gaspesia and Anglo-Canadian) are very proud over their third addition, **Margaret Mary**, their second daughter. . . . **Ralph Libby**, former lab statistician at St. Regis Paper Co.'s Buckport, Maine mill, moves to Deferiet, N.Y. as bleach plant foreman working under **Joe Powell**, pulp mill supt.

. . . **Jerome J. Kipnees** steps up as vice pres. i/c packaging engineering at Atlantic Gummed Paper Corp., Brooklyn, N.Y.

**Gabriel F. Doria** is now technical rep for The U.S. Stoneware Co. in New York. . . . **James S. Hamilton** moves up as vice pres., i/c sales, Potdevin Machine Co., bag machine division.—**Maurice R. Castagne**

### William F. Furcht Is Tech. Rep. for Cyanamid in New England

He will be in paper chemicals dept. headed by F. A. (Bud) Strovink, regional manager, has been in American Cyanamid's research labs in Stamford, Conn.

Knight

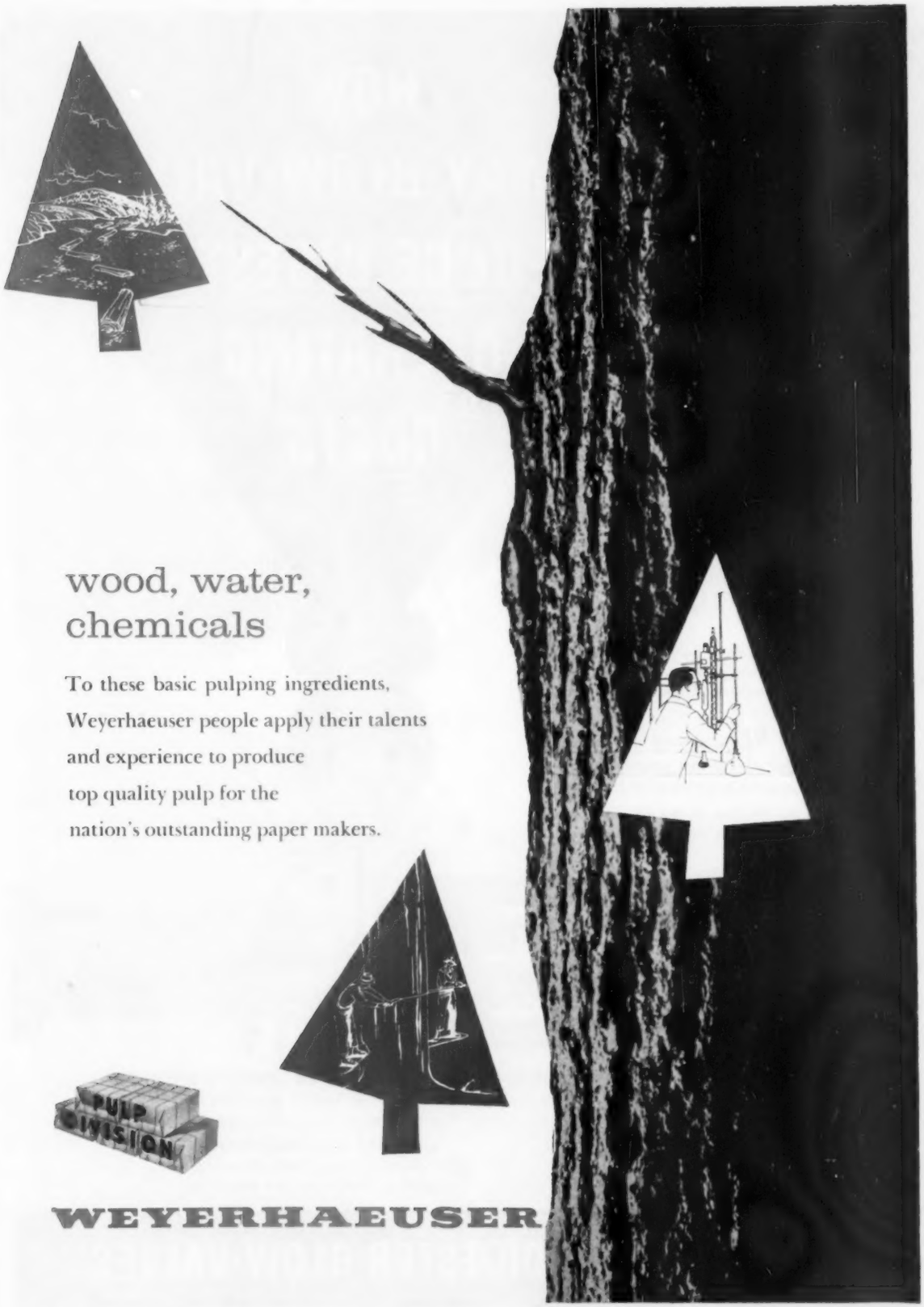
Koon

### Frank A. Knight, Mgr., Standard Packaging Div.

He takes charge of Standard Packaging Corp.'s Eastern Fine Paper & Pulp div., Bangor, Maine. The announcement was made by A. E. Bachmann, vice pres. for paper mills. Charles M. Koon, formerly technical director, succeeds Mr. Knight as production mgr. New technical director is C. T. Bockus, previously Mr. Koon's assistant.

Mr. Knight joined the company in 1938 as chemical engineer and became successively pulp mill supt., mgr. of pulp manufacturing and production mgr. He joined the division's executive committee in 1959.

Mr. Koon came to Eastern in 1958 as technical director. He had previously been technical service supervisor for Oxford Paper Co. and at one time was a research associate at the Institute of Paper Chemistry.


wood, water,
chemicals
To these basic pulping ingredients,
Weyerhaeuser people apply their talents
and experience to produce
top quality pulp for the
nation's outstanding paper makers.
PULP
DIVISION
WEYERHAEUSER

# HOW YARWAY BLOW-VALVES REDUCE DIGESTER OPERATING COSTS

## Faster blow

Valve by valve comparisons show Yarway Seatless have up to 100% greater discharge area than some other digester blow valves of the same nominal pipe size. Result—faster discharge, lower pressure drop.

## Cleaner blow

Steam purging is unnecessary since Yarway's seatless hollow-sliding-plunger design eliminates all pockets where wood chips or tramp metal can hang up.

## Tighter seal

Yarway's tight seal (spring-loaded packing rings above and below inlet port) prevents loss of cooking liquor and insures thorough cooking of pulp.

**It all adds up** to reduced blowing time, more cooks per day, greater output of pulp—
LOWER DIGESTER OPERATING COSTS.

*Send for free bulletin on the selection, operation and maintenance of digester blow-valves.*

Yarway Blow-Valve in open position. Note full, free discharge.

**REMOTE-CONTROLLED, ELECTRIC OR HYDRAULIC OPERATION**
Yarway Digester Blow-Valves may be controlled from any remote point. Choice of motor-unit or hydraulic-cylinder operation.

YARNALL-WARING COMPANY
100 Mermaid Ave., Philadelphia 18, Pa.
*BRANCH OFFICES IN PRINCIPAL CITIES*

**YARWAY DIGESTER BLOW-VALVES**

# Noteworthy

**Letter papers which reflect good taste are made with Glidden Zopaque Titanium Dioxide**

Stationery often must serve as a man's personal emissary. For this task, it requires the quality appearance supplied by Glidden Zopaque.

Zopaque lends highest opacity, whiteness and brightness to paper products. Readily dispersible, it is ideal for all formulations.

Write now for full information on grades of Glidden Zopaque Titanium Dioxide specially developed for beater addition and coatings.

QUALITY Glidden PRODUCTS

**FINEST PIGMENTS FOR INDUSTRY**

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

*(This advertisement is printed on paper stock containing Glidden ZOPAQUE Titanium Dioxide.)*

# PULP & PAPER — Strictly Personal

### Carl Magnus Back in U. S.

Carl Magnus, papermaking consultant, has returned from an extended tour of the Orient, most of the time in Korea, and is resuming his consulting activities in this country from his residence, Nincar Lodge, RR.2, Johnson, Vermont. He wrote several articles on Korean and Japanese papermaking for PULP & PAPER and PULP & PAPER INTERNATIONAL while abroad.

### Henry B. Rust II, Vice Pres., Rust Engineering, Dies

Henry Budington Rust II, vice president and director, The Rust Engineering Co., and its affiliates, died Jan. 8 near Fort Walton Beach, Fla., at the age of 47. He worked up through various positions in his company, from tracer, then field clerk and draughtsman, and in recent years was active in its management with his brother, **George M. Rust.**


**Attractive, Corrosion-Resistant Glazed-Tile Effluent and Water Treatment Tanks**

As the final step of construction, Stebbins workmen carefully wash down the exterior of the tanks with acid.

In this view of tank floors under construction, note the clean, smooth joints — the mark of good workmanship. Note the variety of tile shapes. Horizontal and vertical steel reinforcing is shown in the walls which will be solidly filled with concrete as work progresses.

***Complete Service — Design, Installation, Maintenance***

WRITE FOR BULLETIN AET-59

SEMCO

**STEBBINS** Engineering and Manufacturing Company

WATERTOWN, N. Y. • PENSACOLA, FLORIDA

STEBBINS ENGINEERING CORP. — TOWER BLDG., SEATTLE, WASH.

CANADIAN STEBBINS ENGINEERING & MANUFACTURING CO., LTD.

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SINCE 1884

Specialists in Design, Installation and Servicing of Linings and Tile Tanks

Nielsen

Gallup

### Nielsen, Atterbury's President; Gallup, Consultant and Director

ARTHUR P. NIELSEN, JR. former vice pres. and treas., Atterbury Bros., Inc., 110 East 42nd, New York, supplier of woodpulp, paper stock and other paper industry commodities since 1876, has succeeded WILLIAM ROACH as president. THOMAS DUDLEY was elected vice pres. and secretary.

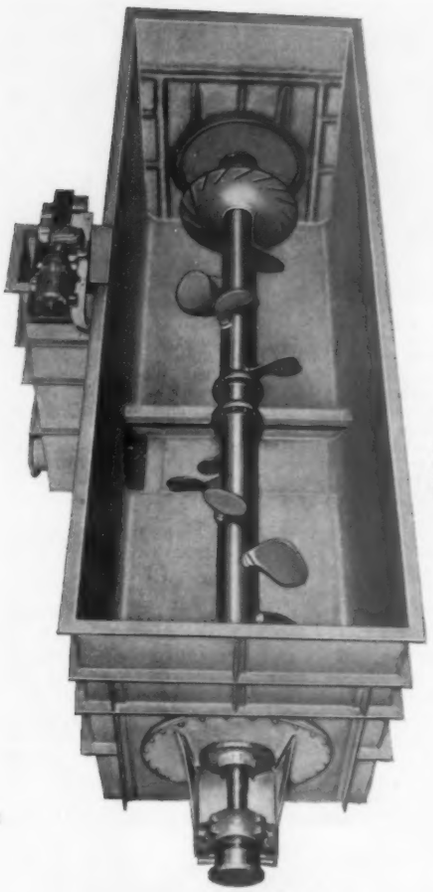
Following the election, Mr. Nielsen announced that C. W. GALLUP, who retired as president and purchasing agent of New York & Pennsylvania Co. last June, has joined Atterbury as a consultant and he also will serve on its board of directors.

## Pacific

**Earl A. N. Johnson,** Edmonds, Wash., who is engaged in sales and development of forest products industries equipment for Dorr-Oliver Inc., has enlarged his product line to include Hercules Filter Corp., Hawthorne, N.J. . . . **Paul Marmont** succeeds **Richard Worl** as Seattle district sales mgr. for Western Gear Corp.; Mr. Worl moves to California as sales mgr. of the firm's precision tool division. . . . **William Zimmerman,** Pacific Coast Assn. of Pulp & Paper Manufacturers, elected president of Pacific Northwest Personnel Management Assn.'s Portland, Ore. chapter.

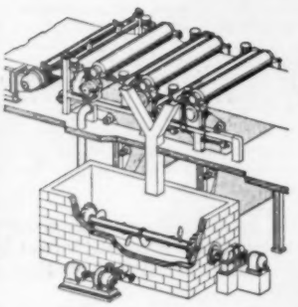
**H. Stuart Daniels,** president of Georgia-Pacific Paper Co., has been named to the new post of chairman of the board. Becoming president and chief executive officer is **Robert E. Flowerree Jr.**; he continues as vice pres. for manufacturing of the parent firm, Georgia-Pacific Corp. In the company's realignment of its Oregon executive staff, **William J. Shelton** will continue in charge of G-P Paper's production which has increased 40% in the past two years. Completion of current construction in mid-1960 will double the original capacity at Toledo, Ore. Vice Pres. **Albert G. Naudain** previously sharing top sales responsibilities with Mr. Daniels, will be in charge of sales.

**William C. Pittam,** project engineer for Stone & Webster Engineering Corp. in charge of expansion at Georgia-Pacific Paper Co's. pulp-paper plant at Toledo, Ore., was recently promoted to consulting engineer. . . .

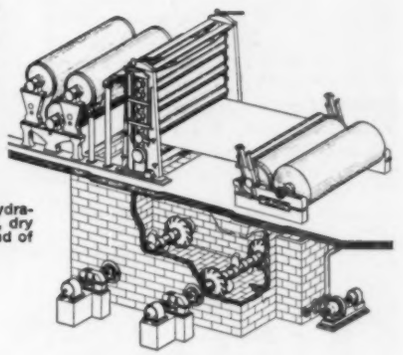


## This is the Hydrabreaker

### *One of the Several Types of Black-Clawson Specialized Broke Pulpers for Under and Off Machine Application*



Single shaft Hydrabreaker for slushing wet broke.



Double shaft design with Hydrapulper type rotors for hard, dry broke pulping under dry end of machine.

The unique Hydrabreaker has joined the famous Hydrapulper-Duopulper family of specialized broke pulping equipment.

It features:

Low Headroom . . . economically installed under most any machine, large or small.

Low Power Consumption . . . due to horizontal shaft, propeller and optional rotor design.

Fast, Thorough Slushing of Any Stock . . . optional use of one or two Hydrapulper type rotors and selection of single or double shaft design adapts Hydrabreaker to any service ranging from soft, wet broke to hard-to-slush hard, dry broke.

Suits All Stock Conditions . . . tub can be mild steel, stainless, concrete or tile. Furnished with one or two shafts, with or without propellers and rotors depending on type of broke to be slushed.

Let us show you how a Hydrabreaker can improve your broke handling. Write or call . . .

**The Black-Clawson Company**
**Shartle Division, Middletown, Ohio**

***Single Source for Stock Preparation Machines & Systems***

**BLACK-CLAWSON**

Weyerhaeuser Co. promotions: **Harold Semple**, member of Pulp div. construction engineering dept. at Longview, Wash., transfers to Container & Carton div., St. Louis, Mo., as construction engineer; **Warren Aiken** of Longview plant engineering dept. joins Mr. Semple in St. Louis as head of the mechanical section; graduate engineers join Pulp & Paperboard div. at Cosmopolis plant—**John Macan, Scott Williams** as project chemists; **Ralph Mason, Paul E. Harrison** and **J. O. Dock** as project engineers.

D. W. Dron, West Coast engineer recently of Timberman's Engineering Co. and before that chief engineer of Brooks-Scanlon Inc., has been named company engineer for Southwest Forest Industries Inc., Phoenix, Ariz. In this capacity he is directly concerned with improvements contemplated at Southwest's Flagstaff and McNary mills, improved lumber production and the manufacture of wood chips for the firm's pulp-paper mill to be built at Snowflake.

**Maxwell D. Bardeen**, president of Simpson Lee Paper Co., announces the resignation of **Donald McCall** as vice pres. and gen. mgr. of Simpson Paper Co., Everett, Wash. . . . **Archie Cullen**, formerly factory service representative at Bordentown, N.J., has been appointed Western district service engineer for Koppers Co. Inc.'s Container Machinery dept. He will serve the growing container industry in 11 western states from his San Francisco office at 55 New Montgomery St.

Subsequent to attending the 4th Annual Pulp & Paper Conference at the Paper Industry Laboratories, Western Mich. Univ., Kalamazoo, **Frank E. Caskey**, mgr. of technical service and sales for Morden Machines Co., Portland, Ore., returned home on the plane carrying Prime Minister **Nabasuki Kishi** enroute to Japan from his Washington, D. C. treaty-signing trip.

Wollenberg Clarke Peabody Schwartz McDermott Anderson Rack

**Longview Fibre Officers Elected to New Positions**

R. P. WOLLENBERG, since 1957 vice pres. of operations and mgr. of Longfibre's Longview, Wash. mill, advanced to exec. vice pres. and now has general management responsibility for all company activities. He will continue to maintain his office at Longview. W. W. CLARKE, who joined the firm in 1933 and became asst. mill mgr. in 1956, is now vice pres. for production and mill mgr. In this new capacity Mr. Clarke has charge of Longfibre's entire West Coast production. L. C. PEABODY, of San Francisco advanced from secretary-treas. and sales director to vice pres. for sales. G. E. SCHWARTZ, asst. treas. and chief accountant, advanced to secretary-treas. R. G. MCDERMOTT moved up from asst. accountant to chief accountant and asst. treas. N. H. ANDERSON, who has been asst. to the mill mgr., has been promoted to asst. mill mgr. at Longview. F. J. RACK of the San Francisco office has been promoted from asst. to the director of sales to director of paper sales.

GEORGE B. DOWNING (no photo), president of Downing Box Co., which recently became a wholly-owned subsidiary of Longview Fibre, becomes a director and member of the exec. committee.


NEW

*Table Rolls Covered with fiberglass reinforced polyester*

- wears longer
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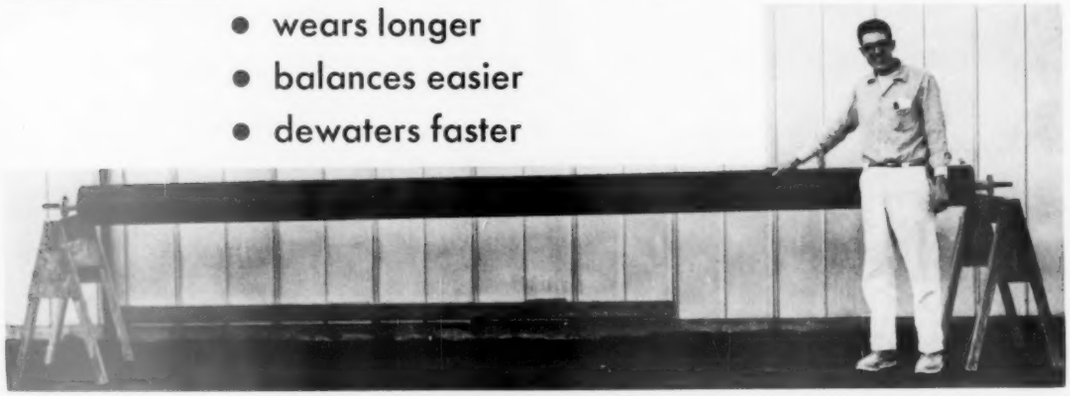

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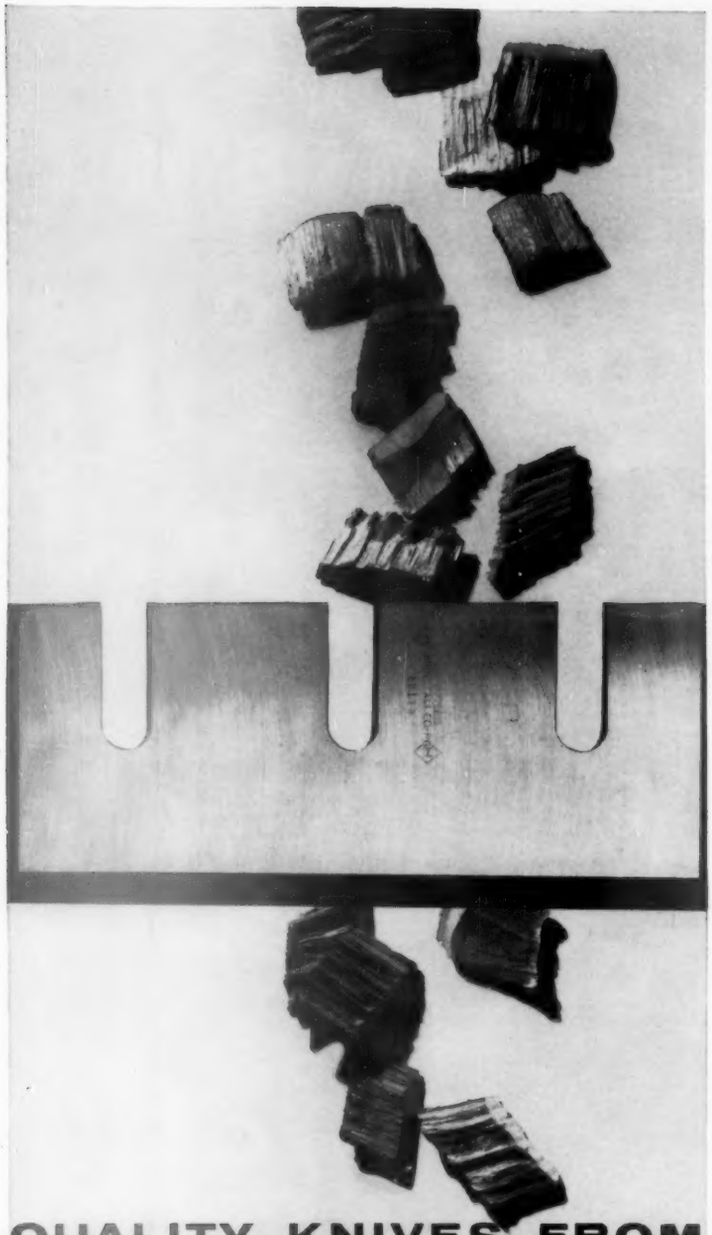
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DIE BLOCKS • FORGINGS • BACK-UP ROLL SLEEVES • RINGS
INDUSTRIAL KNIVES • MATERIALS HANDLING EQUIPMENT

To centralize sales direction activities, Simpson Paper Co., a division of Simpson Lee Paper Co., transferred **W. R. Denman Jr.**, sales mgr., and **G. H. Lecuyer**, mgr. of converting operations, from Everett, Wash., to the firm's San Francisco office at 244 California St.; **C. E. Berry**, formerly machine scheduling supervisor at the Everett mill, is mgr. of the San Francisco office; **W. S. Duggan**, continuing as sales promotion supervisor at Everett, has taken on additional responsibilities as administrative asst. to sales. Simpson Paper's Los Angeles activities have been consolidated at the firm's converting plant offices. The other office has been discontinued.

**Glen D. King**, asst. resident mgr. of Crown Zellerbach Corp.'s West Linn (Ore.) div. (recently chairman of Pacific PIMA to take office in May), advanced into the chairmanship when **F. R. Hamilton** left Simpson Paper Co. to become production mgr. of Bergstrom Paper Co., Neenah, Wis. . . . **Tom Mostyn**, formerly preventive maintenance engineer at Rayonier Inc.'s Port Angeles, Wash. plant, joins Mail-Well Envelope Co. in Portland, Ore., as production mgr.

Promotions announced at St. Regis Paper's Tacoma, Wash. kraft center: **Robert F. Lyncy**, assist. chief chemist since 1945, was appointed manufacturing supt. to succeed **S. Kepple Pratt** who recently became res. mgr.; **Harold Randles** moves from chief chemist to technical supt.; **Wilbur H. Barker**, project engr., becomes asst. technical supt.; **E. J. Hayes** was succeeded as office mgr. by **Ivan Gingrich** when the former took on special duties in controller's dept. and kraft div. sales.

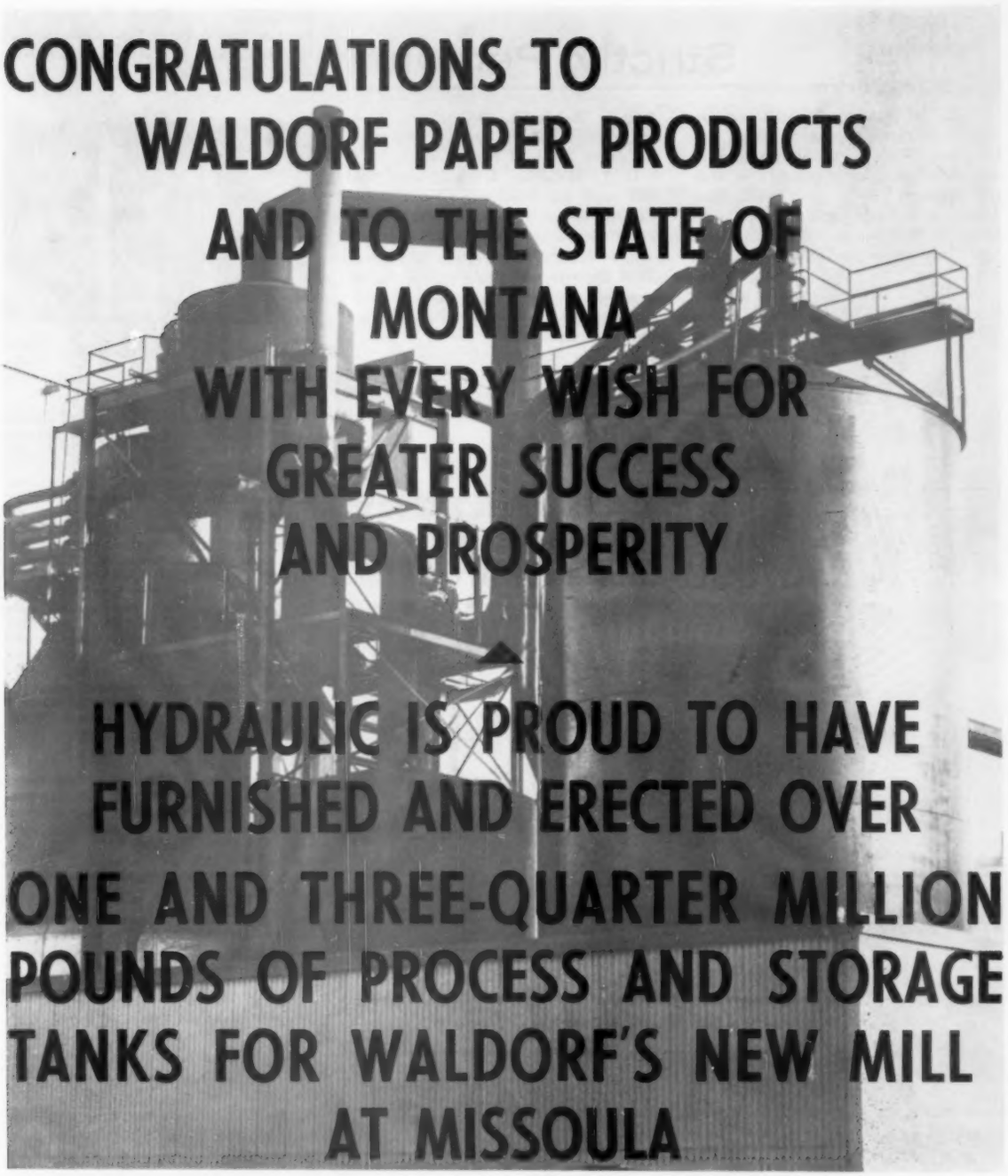
**Ralph Porter**, formerly supt. of Growers Container plant at Fullerton, Calif., is named production mgr. of corrugated plant being built at Glendale, Ariz. by Southwest Industries, Inc.

**Jerrold D. Knisely**, 39, Tacoma, Wash. project engr. for Weyerhaeuser Co., was one of the 50 people killed in the plane crash Jan. 18 near Holdcroft, Va.

The Valley Iron Works Corp., Appleton, Wis., has appointed **E. A. (Jim) Berry**, Longview, Wash., as its representative of the West Coast. He has been with Asten-Hill and Dorr-Oliver Inc. He aslo had ten years' experience with Longview Fibre Co. and graduated from the University of Washington with a b.s. in forest products.

**Frank McGrane** has been appointed manager of the San Francisco office of American Potash & Chemical Corp., according to **William M. Clines**, general sales manager, Western.

**Willard P. Hawley Jr.**, 69, one time vice pres.-gen. mgr. of Hawley Pulp & Paper Co. (founded by his father), died Feb. 1 at Portland, Ore. In the late 1920s he was a leading factor in building of St. Helens Pulp & Paper Co., participating as vice pres.-gen. mgr.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# Strictly Personal

**D. B. Phillips**, mgr. of West Coast container operations, Longview Fibre Co., Longview, Wash., is attending a 13-week advanced management program at Harvard Business School. . . . **W. H. Maxwell**, multiwall supt. at Bogalusa, La., is promoted and transferred to Crown Z, San Francisco, as product mgr.-bags and bag papers.

**Jonathan O. Bulkley**, president of Bulkley, Dunton & Co., New York, N.Y., has been elected a director of Puget Sound Pulp & Timber Co., Bellingham, Wash. His election fills the vacancy caused by the recent death of **Fred Enders**.

**G. L. Hollimon**, formerly asst. pulp mill supt. for Longview (Wash.) Fibre Co. has joined Tennessee River Pulp & Paper Co. as supt. of the 500-ton pulp mill now under construction at Counce, Tenn. He was a 14-year man with Longview and is presently engaged in engineering work for Tennessee River. He expects to arrive at the plant site about March 15. . . . **Harry W. Granger** of Oregon Pulp & Paper Co. is president of the Paper Mill Men's Club of Southern California for 1960.

Otis Dupuis Nunn

## Dupuis to West Linn Nunn in New CZ Post

RAYMOND A. DUPUIS, res. mgr. of Crown Corp.'s, St. Helens (Ore.) div., will divide his time between the St. Helens plant and Crown's larger West Linn div., where he is to succeed MALCOLM J. OTIS as res. mgr. when Mr. Otis retires in June. This arrangement, and the naming of a replacement in advance, is attributed to the extensive modernization program being carried out at the West Linn mill. Mr. Otis, to retire after 40 years' service with Crown, has held his present position since 1950 and was res. mgr. at CZ's Floriston, Cal., Port Angeles, Wash., and Lebanon, Ore. mills before that. At one time he was asst. vice pres. in charge of production at CZ San Francisco headquarters. Mr. Dupuis was res. mgr. of the Port Angeles mill and served as asst. res. mgr. at West Linn prior to assuming his present position at St. Helens in 1955. EDWARD H. NUNN is asst. to the gen. mgr., Chemical Products div., Crown Zellerbach Corp. He moves up from mgr. of St. Francisville Paper Co., St. Francisville, La. Mr. Nunn joined the firm in 1930 as a chemist, later becoming asst. supt., Western-Waxide div., San Leandro, Cal.; asst. paper mill mgr., West Linn, Ore., and resident mgr. at the Carthage, N.Y., mill.

## Name Change At Coast Mills

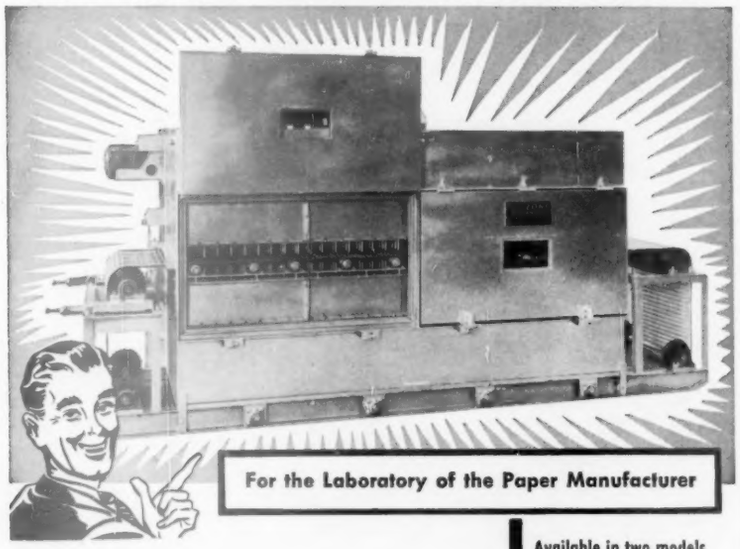
Oregon Pulp & Paper Co., Salem, Ore., and Columbia River Paper Mills, Vancouver, Wash., wholly owned subsidiaries of Columbia River Paper Co., shed their individual corporate structures beginning Jan. 1. They now operate as divisions of the parent firm—Vancouver Div., and Oregon Pulp & Paper Div. of Columbia River Paper Co. **George E. Miller** and **Karl W. Heinlein** continue as resident manager of the respective mills. As of Feb. 1 the parent company's executive offices were moved into the newly built headquarters building at 1121 S.W. Salmon St., Portland 5, Ore.

## R. E. Baker Joins Southwest Forest Industries Inc.

Mr. Baker will be in charge of this firm's newly formed pulp-paper-paperboard division. Southwest is to build a 2-machine mill near Snowflake, Ariz. producing 75,000 tons newsprint annually. He was formerly with Weyerhaeuser Co.


NEW

JET ZONE® LABORATORY and Pilot Plant HIGH VELOCITY DRYER



For the Laboratory of the Paper Manufacturer

- widens the scope of your pilot operation.
- makes initial runs to test market.
- allows wide range of paper formation and finish.
- opens up new avenues for product development.
- extremely adaptable as a dry and cure unit.
- permits exploration of the new coating techniques.

*Write for complete specifications*

**Available in two models to handle 24" web. GAS OR STEAM FIRED!**

**Model L 4**
- Two four-foot long drying zones.

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- Two eight-foot long drying zones.

JOIN THE INDUSTRY...INVESTIGATE THE NEW TECHNIQUE OF HIGH VELOCITY DRYING

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# Why Hunter Packing Company uses STANOIL Industrial Oil

Two reasons: (1) STANOIL is a superior oil. (2) Along with STANOIL, Hunter Packing receives experienced lubrication technical service.

A special antioxidant in STANOIL gives the oil resistance to *chemical* change. Deposits are minimized. The oil has a high viscosity index, is resistant to *temperature* change. It lubricates effectively at both high and low temperatures. Due to special refining techniques, STANOIL will not readily emulsify. A special additive minimizes foaming. STANOIL has a low pour point. It flows freely at low temperatures. A rust inhibitor in STANOIL "plates out" on metal surfaces.

W. P. "Sandy" Wehking, the Standard Oil man who calls on Hunter Packing Company, has plenty of experience in technical service work. He's been at it for 17 years. Sandy studied chemistry at Blackburn College. He has also completed the Standard Oil Sales Engineering School.

To get more information about STANOIL Industrial Oil and to obtain technical help on your lubrication problems, call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

*Quick facts about* **STANOIL Industrial Oil**

- Antioxidant gives oil resistance to chemical change, minimizes deposits.
- Inhibitor "plates out" on metal surfaces, prevents corrosion.
- Receives special refining to eliminate emulsion problems. Contains additive to minimize foaming.
- High viscosity index. Resists temperature change.

*You expect more from* **STANDARD** *and you get it!*

Temperature check. Frank Persson of Hunter Packing Company and Standard Oil lubrication specialist W. P. "Sandy" Wehking inspect one of four compressors in Hunter plant that uses STANOIL Industrial Oil.

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## For Effective Removal of RESIDUAL CHLORINE

Tennessee's Liquid Sulfur Dioxide is a most efficient and economical anti-chlor. Removes residual chlorine and other materials which cause color reversion or yellowing with age. It also eliminates excessive residual chlorine in water.

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## ...Quickly...Profitably

Insert shows how shredder is connected to one plant's present pneumatic waste pick-up system.

● Why waste valuable working space and create hazards hoarding reclaimable stock? Now it is easy to quickly shred all sizes and shapes of sheet corrugated or set-up corrugated boxes with an Industrial Heavy Duty Shredder. Will even convert double-double corrugated to random ¼" to 2" wide shreds ready for baling.

Baled paper is compact, easier, faster to handle. It takes up less than half the space of bundled stock, and can be sold instead of burning or hauling away. "Initial purchase and installation costs of the entire system will be regained in roughly one year thru reduction of labor in scrap handling."

These push-button controlled shredders can also be connected direct to pneumatic pickup systems or belt conveyors. Available in two sizes, 39½" throat and 58" throat. Both models are equipped with individual motor driven crushers which squash fully assembled boxes and shred them in one operation. Also available with single conveyor belt for shredding flat stock.

We'll gamble that an Industrial Shredder will add efficiency and improve house keeping in your plant. FULL SIZE DEMONSTRATOR AVAILABLE — MAKE RESERVATION FOR TRIAL USE.

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performance makes the world of difference

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With their advanced design, sturdy construction, and conforming to latest valve standards, Powell Valves can be depended upon for consistently satisfactory service with little or no maintenance. If you have a valve problem or an unusual flow control condition in the handling of water, oil, gas, air, steam, corrosive fluids, our engineers will gladly help you solve it. Check with your nearby Powell Valve distributor—or write to us.

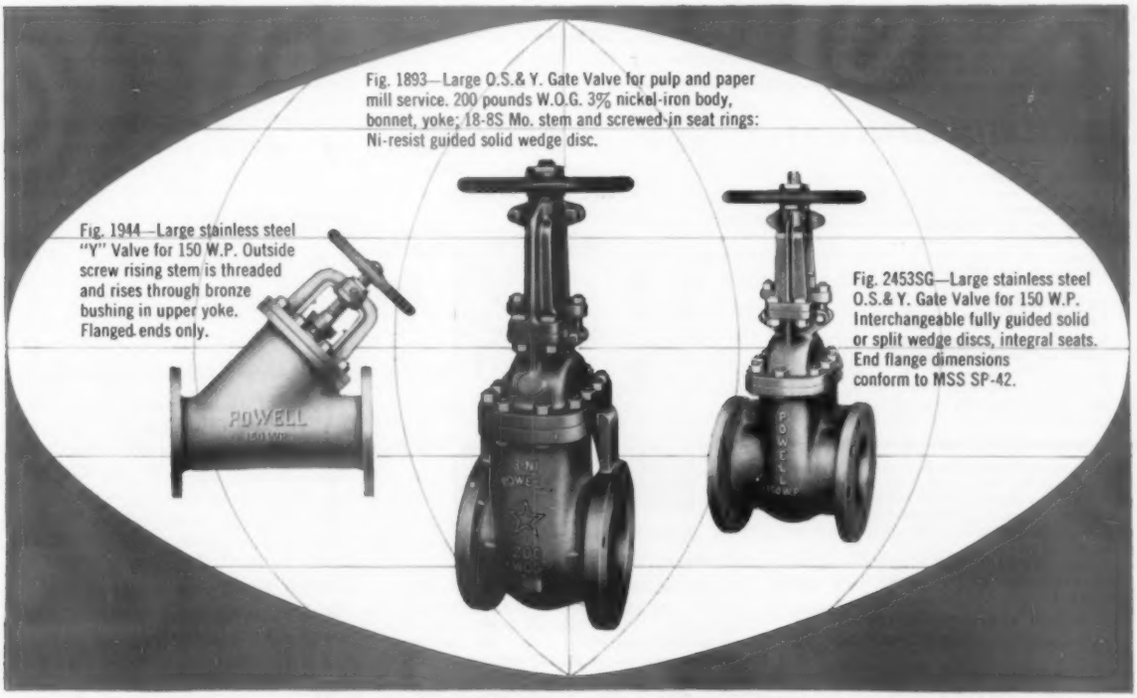
Fig. 1893—Large O.S.& Y. Gate Valve for pulp and paper mill service. 200 pounds W.O.G. 3% nickel-iron body, bonnet, yoke; 18-8S Mo. stem and screwed-in seat rings: Ni-resist guided solid wedge disc.
Fig. 1944—Large stainless steel "Y" Valve for 150 W.P. Outside screw rising stem is threaded and rises through bronze bushing in upper yoke. Flanged ends only.
Fig. 2453SG—Large stainless steel O.S.& Y. Gate Valve for 150 W.P. Interchangeable fully guided solid or split wedge discs, integral seats. End flange dimensions conform to MSS SP-42.
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1. Manufacturing Process
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4. Inks
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WITH
1. Low Cost (in one application as little as one-drop in a one-pint can before filling with a resin emulsion gave 20% more cans per minute than before.)
2. Practically no residual odor.

SOLVENT METAL EXTRACTION

TBP is widely used for the solvent extraction of certain metals and rare earths. At present, in this field, the largest use is associated with the atomic energy processes both in the initial preparation of the ores and the recovery of spent reactor fuels. Our TBP meets the AEC specifications.

OTHER USES

A high boiling solvent for most natural gums and synthetic resins for lithographic inks, etc. TBP is a recommended solvent with excellent blending power for preparing concentrates of 2-4D acid.

TBP is non-corrosive, non-flammable, with a pour point of <—80°C. and a vapor pressure of only 7.3 mm. Hg at 150°C. These properties suggest its use as a functional fluid for a variety of applications: such as a heat transfer medium.

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PULP & PAPER

# Strictly Personal

## Pulpwood

**William E. Gibbons,** veteran International Paper Co. forester and most recently area supervisor in the Gul Woodlands dept., has been named wood procurement supervisor for Tennessee River Pulp & Paper Co. . . . **V. Y. Davis,** asst. supt. of Crown Zellerbach Corp.'s Clatsop (Ore.) Tree Farm, has been made supt.. of that operation. . . . **Robert F. Rogers,** woodlands dept., Kimberly-Clark Corp., has received the highest honor given to adults by the Boy Scouts of America—the Silver Beaver Award. **Walter H. Swanson,** K-C vice pres. in charge of research and development and himself a former winner, made the presentation.

**Wallace R. Tower,** for seven years a pilot at the Winthrop, Wash. Smokejumper base, is new regional air officer for the Pacific Northwest region of the U. S. Forest Service; he is in charge of a seven-plane fleet. . . . **Clark B. Davis** has retired as woodlands vice pres. of Abitibi Power & Paper Co. Ltd. A pioneer in modernizing Ontario's forest operations, he was with Abitibi 40 years. Appointed woodlands mgr. is **E. E. (Nem) Grainger,** formerly asst. mgr.

Industry foresters—**Paul M. Dunn,** director of forestry for St. Regis Paper, **John W. Duffield,** tech. dir. of Col. W. B. Greeley Forest Nursery of Industrial Forestry Assn., **Bernard Orrell,** vice pres. Weyerhaeuser Co.—have been elevated by Society of American Foresters to grade of fellow in recognition of outstanding contributions to the forestry profession . . . **Wm. D. Hagenstein,** exec. vice pres. of Industrial Forestry Assn., Portland, Ore., was re-elected to Society of American Foresters Council for another year.

New assignments in Simpson Logging Co.'s Shelton Working Circle logging div. in western Washington: **Alvin Manberg** promoted from rigging foreman to logging supt., succeeding **Alvin Hulbert** who, in turn succeeds **Purl Jemison** as railroad supt. Mr. Jemison who has been affiliated with Simpson since 1921, was assigned the new position of engineering asst. supervising dredging and construction work.

**John H. Hinman,** board chairman of International Paper Co., is elected president of American Forest Products Industries; new vice pres. is **W. R. Adams,** president of St. Regis Paper Co. . . . In another AFPI announcement, **Thomas B. Brogan** of Chicago becomes Midwest regional mgr.

**F. A. Albert, St. Regis Southern Woodlands Mgr.**

Mr. Albert becomes southern lands and forests mgr. as part of a company reorganization in woodlands personnel. He was formerly director of the Georgia Forest Research Council and retired in 1957 from the U. S. Forest Service after 30 years' service. He headquarters in Jacksonville, Fla.

Davis

Grainger

**Clark Davis of Abitibi Retires; E. E. Grainger, Woodlands Mgr.**

After 40 years of service with Abitibi Power & Paper Co., during which time he pioneered development of forest operations from primitive woods camps to a mechanized operation of high efficiency, Mr. Davis has retired as vice pres., woodlands. "Nem" Grainger, who assumed his new duties Jan. 1, has had many years of successful service in woodlands operation and was named assistant woodlands mgr., last summer.

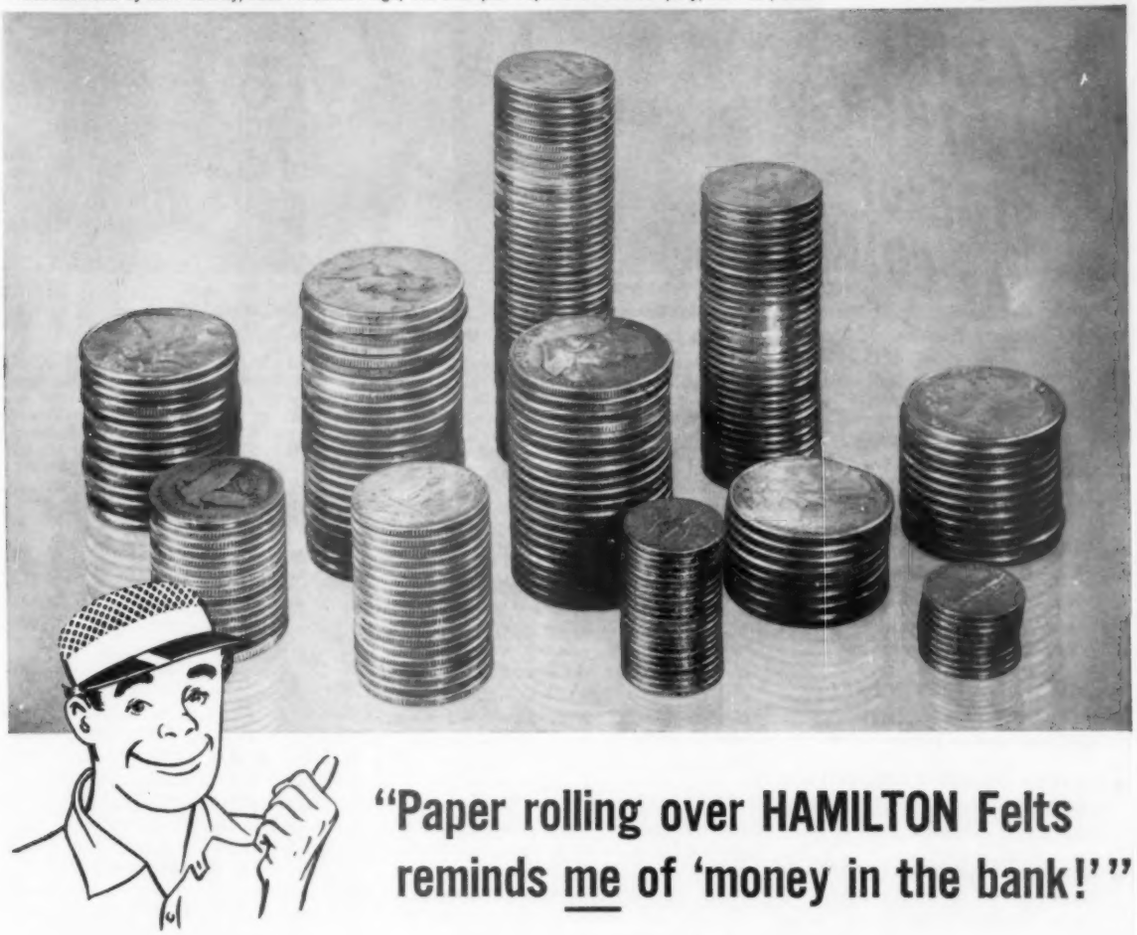
## Canada

**George M. Hobart,** pres., Consolidated Paper Corp., Montreal, accompanied by **H. W. Sloan,** vice pres. St. Regis Paper Co., New York, and **L. R. MacRae,** vice pres. St. Regis Paper Co., Montreal, recently made a cost-to-coast tour of Canada inspecting the manufacturing facilities of St. Regis being acquired by Consolidated.

**B. F. Avery,** long-time executive of the KVP Co. at Espanola, Ont., and formerly gen. mgr., Great Lakes Paper Co., Fort William, Ont., has been reelected president of the Canadian Forestry Association.

* Idea submitted by John Ramsey, Asst. Production Mgr., The Champion Paper and Fibre Company, Hamilton, Ohio

Photo by: H. Armstrong Roberts



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YOU CAN'T BEAT

**Hamilton**

**FELTS**

"Every time I see paper
rolling over Hamilton Felts,"
writes John Ramsey, paper-
maker, of Hamilton, Ohio,
"it reminds me of money—
money being saved for the papermaker."

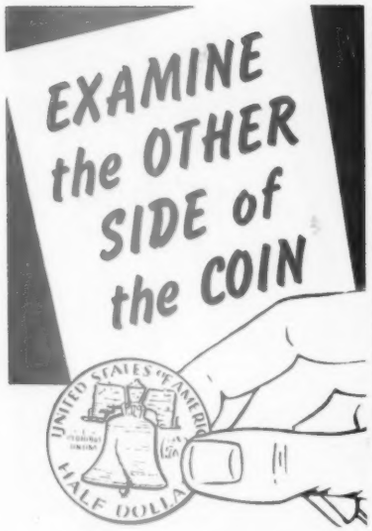
The long service
and high quality performance
you get from Hamilton Felts
means money in the bank.
Hamilton Felts help you beat
the high cost of downtime
by keeping your machines running
at top speed . . . longer . . .
turning out more tonnage
with less broke or imperfections.

Ask your Hamilton Felts Service Salesman
how long-lasting Hamilton Felts
can help you reduce
the high cost of downtime . . .
or write us—today.

*** WIN . . . *A NEW Spincast Fishing Outfit***

"What famous landmark reminds you of Hamilton Felts? Tell us why in a few words; sign your name and address and name of company. The best letter each month by a papermaker wins a new 1960 model Shakespeare Spincast Rod and Reel — FREE! Every papermaker entrant receives a famous Rex Spoon fishing lure — FREE. Send me your suggestion — today. Ham Feltz, 612 First National Bank Bldg., Cincinnati 2, Ohio."

**SHULER & BENNINGHOFEN, HAMILTON, OHIO**

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- **RAW WATER TREATMENT** by the use of NEVA-CLOG in demineralizers and softeners.
- **POWER PLANT CONDENSATE RECOVERY** with RIMLOK filter leaves and NEVA-CLOG.
- **WHITE WATER TREATMENT** with vibrating screens, separator rescreening and NEVA-CLOG in ion exchangers.
- **TRAP STRAINING** for resin recovery and product purity with custom-designed, complete strainers.

These and other interesting items will be discussed in the forthcoming Paper Mill Issue of "Multi-Matter." Send this coupon for your free copy.

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1344 Garrison Ave., New York 59, N. Y.
*Send me "Multi-Matter"*

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Title_____
Company_____
Address_____
City_____ Zone____ State_____

### Ronald Evans Supervises Irving Pulp & Paper Construction

As construction manager, he is directing operations at the location of Irving's new mill project at Lancaster, New Brunswick. He recently journeyed to Toronto to attend the Quarter Century Club party held by Kimberly-Clark Canada, Ltd. He was the only member inducted for the year. He received congratulations from **F. S. Seaborne,** K-C Canada president.

**R. Bruce Robinson** has been named sales mgr., Maritime Paper Products, Halifax, N.S., after an association with the corrugated container industry in production and selling for the past ten years. He was former supervisor of Bathurst Containers, Ltd., research laboratory. . . . **Hal Holden,** formerly with Columbia Cellulose Co. and B. C. Forest Products, Ltd., has joined the public relations staff of Crown Zellerbach Canada, Vancouver.

**Dr. G. H. Tomlinson** has been appointed chairman of the Howard Smith administration research committee. **D. S. Abbott** and **H. E. Mason,** other members of the Howard Smith organization, are also on the committee, in addition to **Joseph Robertson** and **A. M. Irvine.**

**W. D. Mosher** is named asst. mgr. of manufacturing for Consolidated Paper Corp. Ltd.. Grand Mere, Que. Appointed acting mgr. of the Wayagamack div. in Trois Rivières is **A. G. Kay,** while **C. H. Neil** becomes acting gen. supt. Other Wayagamack promotions: **R. Hunter, G. E. Backer** and **A. M. Hubley,** assistants to the gen. supt.; **John W. Penney,** acting supt., finishing and shipping; **Wayne O. Lundrigan,** acting mechanical supt.; **James A. Adams,** acting kraft beater room supt.; **R. Wilfred Sweeney,** acting divisional engineer.

**B. I. Howe,** formerly with Quebec North Shore Paper Co., Baie Comeau, Que., has joined the staff of Anglo-Canadian Pulp & Paper Mills Ltd., Quebec City. . . . **Gordon L. Bennett** is new mgr. of sales development for Dryden Paper Co. Ltd., with offices in Montreal; **Dennis H. O'Brien** is mgr. of kraft paper and board sales. . . . New mgr. of paperboard sales for Fraser Companies Ltd. is **Douglas D. Morrison,** former divisional sales mgr.

**Percy M. Fox,** pres. St. Lawrence Corp. Montreal, and **Ralph R. Brenan,** director of the Fraser Companies, St.

### Donald C. Currie Named Asst. Mill Mgr.

. . . of the Beauharnois (Que.) div. of Howard Smith Paper Mills Ltd. He was formerly Beauharnois gen. supt. and at one time served as supt. at both Beauharnois and Cornwall, Ont. A graduate of the Univ. of New Brunswick, he joined Howard Smith in 1928 as chief chemist and was one of the original members of the research dept. then headed by GEORGE TOMLINSON SR.

John, N.B., have been elected to the board of Crush International, Ltd. **F. F. Foote** continues as a director of Westminster Paper Co., New Westminster, B.C., although he retired as treasurer. **W. C. Carlson** as been named to succeed Mr. Foote, and will continue as secretary. Mr. Carlson joined the company as office manager in 1946. **A. L. Taylor** is filling the newly created position of comptroller.

**R. E. Costello,** gen. mgr., panelboard division, Abitibi Power & Paper Co., Toronto, has announced retirement of **A. I. Farnsworth** as mill manager at Sturgeon Falls and the appointment of **E. G. Heslop** as his successor. Mr. Heslop joined the Sturgeon Falls division after serving for many years with Provincial Paper Ltd., an Abitibi subsidiary at Port Arthur, Ont. . . . **I. T. Pye,** formerly of Quebec North Shore Paper Co., Baie Comeau, Que., has joined the MacMillan, Bloedel & Powell River organization at Port Alberni, B.C.

### C. S. J. Bowell, Vice Pres., Pulp & Paper Sales, MacM-B & P-R

He heads all pulp and paper sales for the merger of the two big forest products industries of western Canada, now operating under name of MacMillan-Bloedel & Powell River Co., Vancouver, Canada. He had been vice pres., pulp and paper, for MacMillan-Bloedel.

## "Reliance V★S Drive provides 60-second acceleration and precise tension control of Cameron winder

H. E. Stebner, Paper Application Engineer, Reliance Electric & Engineering Co.

"At speeds of 6,000 FPM, one of the keys to precise tension control of newsprint is electrical regenerative braking on the unwind stand. A Reliance D-c. motor powering the unwind roll acts as a drag generator, maintaining critical tension.

"For normal stopping, positive controlled deceleration is provided by regenerative braking in less than 60 seconds. Emergency stopping is a combination of dynamic and mechanical braking to provide fastest possible stopping. A VSR Regulator system controls the unwind tension, continuously compensating for $WR^2$ and taper tension. Another VSR Regulator holds over-all winder speed constant.

Now in use at Southland Paper Mills, Inc., Lufkin, Texas, the Cameron Winder has a capacity for a 248" mill roll, 74" in diameter, and weighing 3300 pounds. Reliance Drive equipment requires only minor maintenance, with practically no downtime caused by drive failure . . . and a uniform, high quality paper product is the result.

Reliance Sales Engineers are ready to apply their application skills to your drive problems. Call your nearest Reliance office or write for further information. L-1804

Product of the combined resources of Reliance Electric and Engineering Company and its Master and Reeves Divisions

**RELIANCE** ELECTRIC AND ENGINEERING CO.

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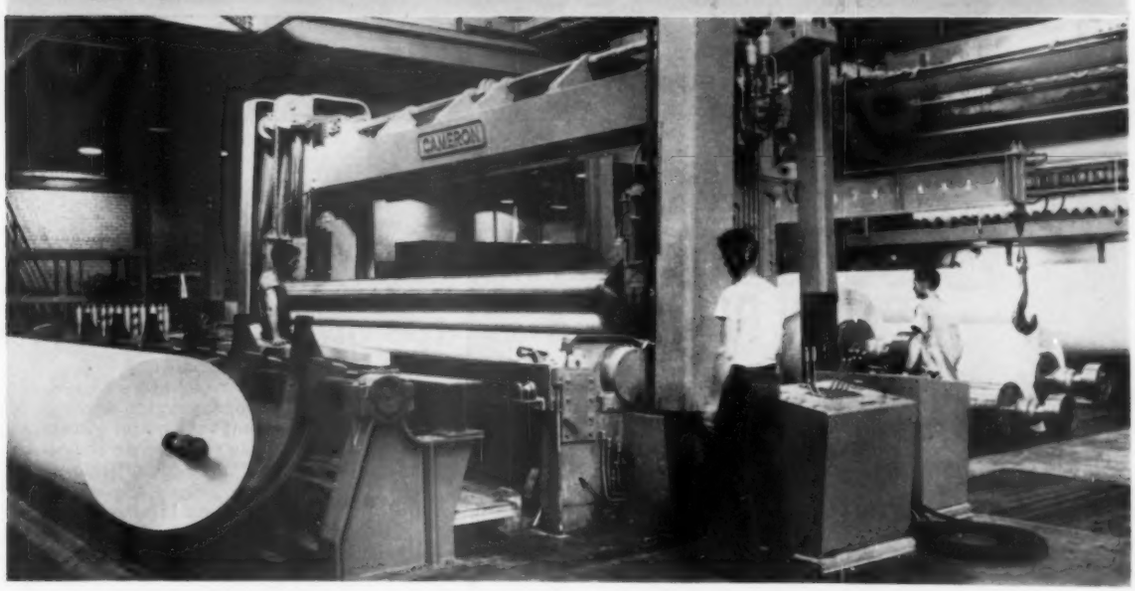
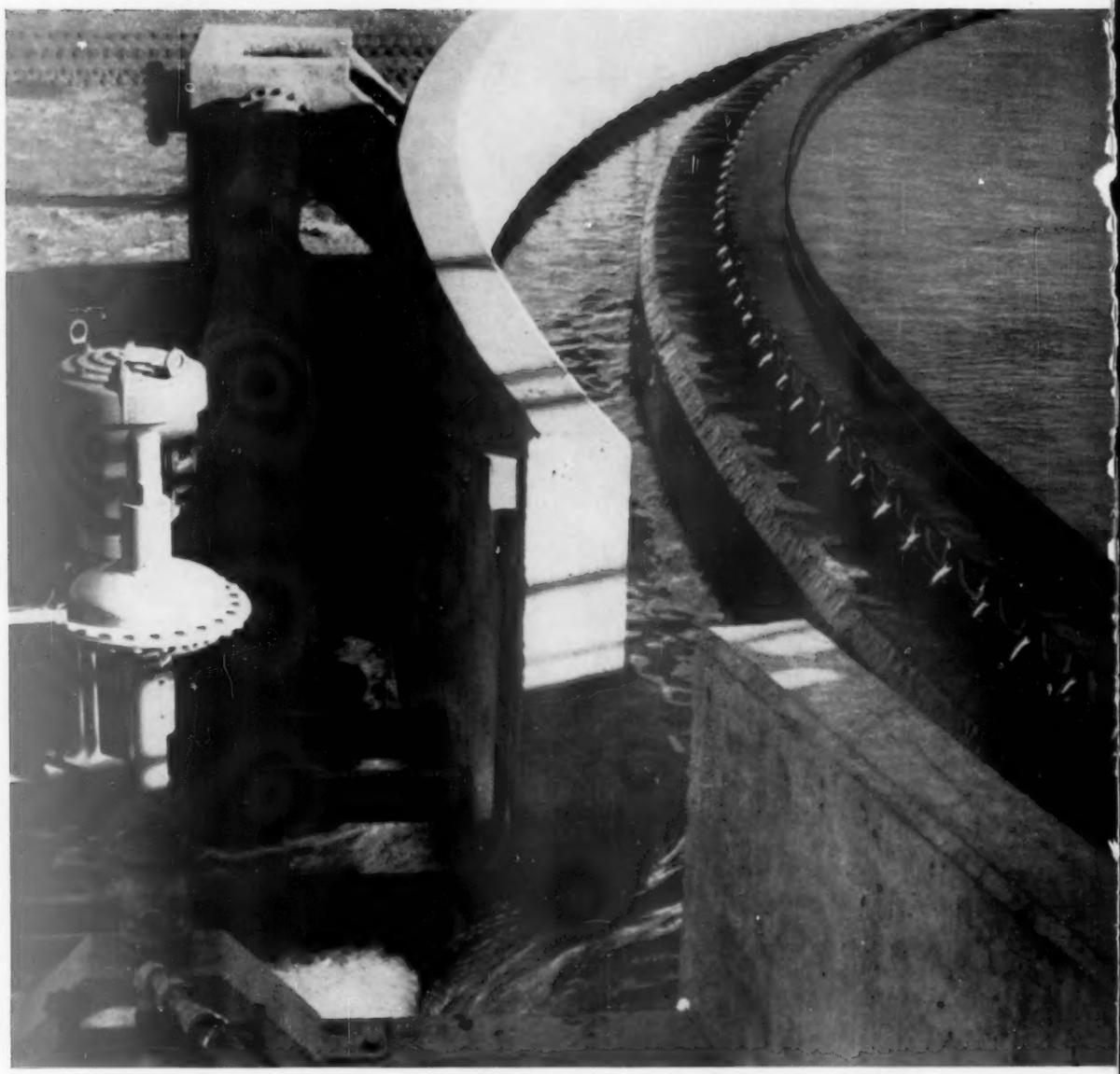
Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.





Clean water from Dorr Clarifier flows down aeration ladder on way to settling basin.

# HOW DIAMOND GARDNER SOLVED EFFLUENT PROBLEM AT NEW PLANT *and won approval for site near river bank*

Diamond Gardner's new integrated forest products plant at Red Bluff, Calif., is a model installation for complete utilization of the timber harvest.

A sawmill produces lumber (90 million bd. ft. per year) from logs gathered at this central point, with bark and sawdust serving as fuel for the boiler plant. Sawmill residuals (slabs and edgings) are processed into pulp. The pulp mill's entire output goes to the molded products plant—the first big one on the Pacific Coast—for processing into food containers, plates, egg cartons and the like.

But before this model project could get off the drawing board, the company had to provide a plan for disposing of plant effluent that would win state approval. This was vital since the site is near the banks of the Sacramento River, and there could be no possibility of pollution by effluent.

### Effluent Treatment Plant

The efficient waste treatment plant, designed by the company engineers, uses Dorr-Oliver equipment. Effluent from pulp and molding processes flows to a Dorr

Sludge from Clarifier is pumped to Oliver Vacuum Filter for dewatering prior to disposal.

Clarifier, where flocculants are metered in. The resulting water, of 25-30 alpha units turbidity, flows down aerating stairs en route to a three-compartment, 9¼-acre settling basin, becoming progressively clearer until it finally discharges into a seven-acre percolation pond. From here, it disperses underground.

Sludge recovered from the Dorr Clarifier is fed to an Oliver rotary drum Vacuum Filter designed to operate either as a precoat unit or with roll discharge, similar to a pulp filter. Fibers and fine particles are removed as a mat for disposal.

According to the plant manager, the effluent treatment plant has proved highly effective. All tests to date indicate that the processed water meets state water pollution control standards.

Dorr-Oliver has a wealth of experience and diversified equipment to solve waste disposal problems of all kinds. For further information on how they can be put to work in your operations, write to Dorr-Oliver Incorporated, Stamford, Connecticut.

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

PULP & PAPER

# Strictly Personal

PALMA LEBORGNE has been appointed paper mill supt., Donnacona Paper Co. Ltd., with LEO DUBE asst.. ROBERT D. FELS has been named board mill production supt. and WALTER SHESKO board mill supt. at the same company.

**T. S. Jones**, mill mgr.; **A. Glen**, chief engineer; **David Wheatley**, mechanical shop foreman and **F. Brooks**, safety supervisor, attended a ceremony honoring **A. B. Brampton**, of Dryden Paper Co., when he was presented with a certificate of merit.

**Ralph M. Shaw**, exec vice pres., MacMillan, Bloedel & Powell River Co. is in charge of all company sales as a result of a general staff reorganization following the merger. He will be assisted by **Clifford Crispin**, vice pres. in wood product sales, advertising and trade promotion, with **G. S. J. Bowell**, vice pres. directly in charge of pulp and paper sales. **John E. Liersch**, vice president, will direct pulp and paper production, forestry and timberland management, being assisted by **W. C. R. Jones**, formerly vice president, public and industrial relations for Powell River Co. **E. G. Shorter**, a former M&B executive, becomes vice pres., logging, wood and product production, and **I. H. Andrews**, another Powell River Co. vice pres. will now be vice pres. in charge of planning research and development. **G. D. Eccott** is vice pres., finance; **A. C. Kennedy**, vice president, labor relations; **J. A. Kyles**, secretary of the company and vice pres., administration.—**Harold P. J. Moorhead**, former vice pres., engineering for Powell River Co., continues in that capacity for the combined company. Status of Powell River Sales Co. had not been changed in mid-January but will probably be integrated before long.—**Charles L. Shaw.**

### Dr. D. J. Rowse in New Post With Columbia Cellulose

He has been appointed technical asst. to the operating supt. at the Prince Rupert, B.C. bleached sulfite dissolved pulp mill. He joined the firm early in 1951 as a technician in the filter plant and was chief process engineer prior to his recent appointment. Dr. Rowse will coordinate mill trials and special projects from an operating standpoint and act as liaison with the technical and process engineering departments.

**H. Arthur Sewell, Exec. Vice Pres., Ontario Paper Co. Ltd.**

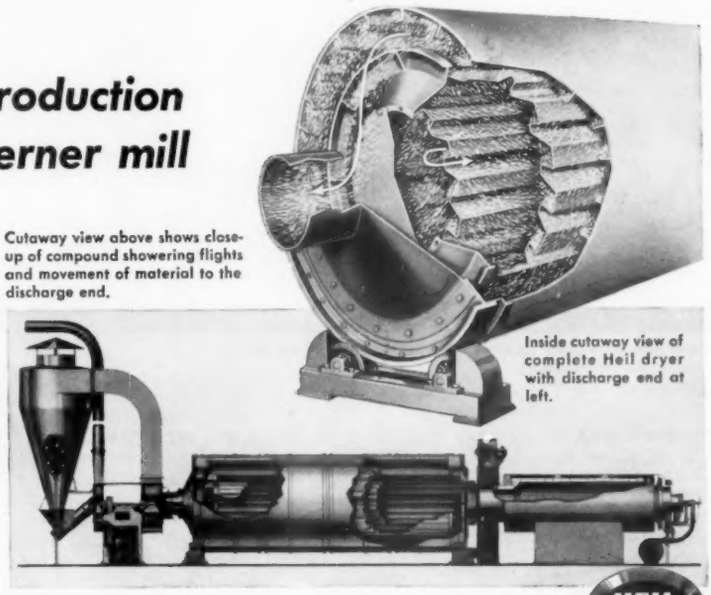
He is named to the same post with Quebec North Shore Paper Co., according to announcement by **Arthur A. Schmon**, president and gen. mgr. Mr. Sewell has been vice pres. in charge of woodlands for both firms since 1955 and in his new post will have overall responsibility for operation.

Mr. Sewell joined the woodlands division of Price Bros. & Co. Ltd. in 1919, came to Ontario Paper as mgr. of the Baie Comeau, Que. woods operations in 1936. He became woodlands mgr. of the Quebec div. in 1945 and in 1947 woodlands gen. mgr. for both firms. Two years later Mr. Sewell was named gen. mgr. of woodlands at the Thorold, Ont. headquarters.


## HEIL dryers speed production in new Waldorf-Hoerner mill

Waldorf-Hoerner Paper Products Co. chose Heil dryers to handle the carefully controlled drying of pulp in its new Missoula, Montana, plant. The first pulp mill in the state — and the first chemical pulp mill of its kind anywhere — the new plant can ship 250 tons of kraft pulp daily.

The Heil dryer used here flash-dries pulp to a uniform moisture content. A stream of hot air carries pulp through a three-pass drum. Fine particles move through quickly to cooler zones and are not over-dried, while heavier ones with more moisture move more slowly so each is dried to the same uniform moisture content regardless of size. Compound showering flights on each drum keep pulp moving evenly . . . eliminate surging.



Cutaway view above shows close-up of compound showering flights and movement of material to the discharge end.

Inside cutaway view of complete Heil dryer with discharge end at left.

*The Arnold Dryer Co.*
*A subsidiary of*

THE HEIL CO.

*Founded 1901*

3000 W. Montana Street • Milwaukee 1, Wisconsin

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Allied Chemical

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**61 Broadway, New York 6, N. Y.**

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**SOLVAY PROCESS DIVISION**
**Allied Chemical Corporation, 61 Broadway, New York 6, N. Y.**

Please send without obligation your new Solvay Technical and Engineering Service Bulletin No. 19, "Hydrogen Peroxide."

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felt facts

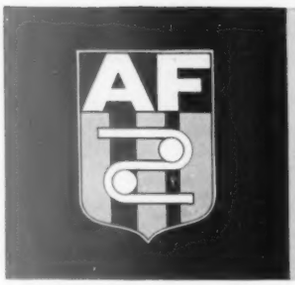
# FILLING-UP PROBLEMS?

## Try Albany's proven 1-2-3 Felt Washing Program!

Nearly everyone has the problem of keeping paper machine felts clean and open throughout their life.

Albany Felt has done something about this by establishing a separate department whose FIRST and ONLY function is to be of service to you in this vital area.

Many paper mills already have taken advantage of this new service. All have shown outstanding improvement with higher machine speeds, better drainage and prolonged felt life.




**ALBANY FELT COMPANY**

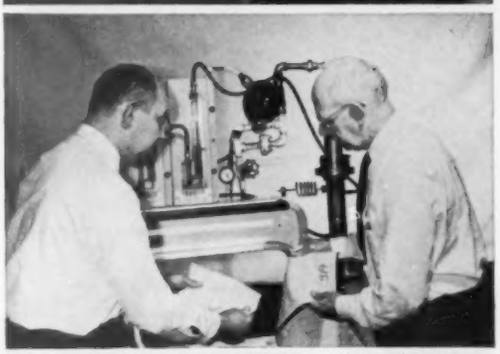
ALBANY, N. Y.

*The World's Largest Manufacturer of Paper Machine Felts*

# . . . . Here's How Albany's Felt Washing Program works!

### 1. On the spot analysis

Because there is no universal cleaning solution or felt cleaning method, our felt washing program engineer visits your mill to work with you on your individual problem.



### 2. Laboratory testing

Next we use the latest scientific equipment and chemicals to test portions of your used felts to discover the best cleaning compounds and washing equipment to fit your needs.

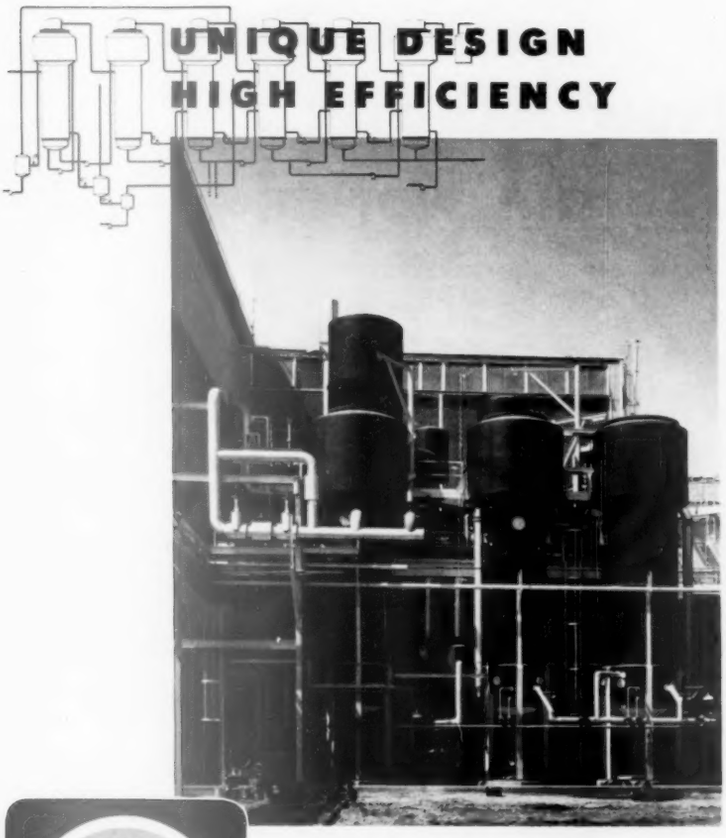
### 3. Written report

Specially trained engineers then submit a written report to you covering every phase of their recommendations of a felt washing program tailored to your operation.

***If you feel your present felt cleaning procedures may be improved or if you wish information on the adaption of proven methods to your particular machines–***

**TALK IT OVER WITH YOUR ALBANY FELT SALES ENGINEER**

# UNIQUE DESIGN HIGH EFFICIENCY



## BLACK LIQUOR EVAPORATOR at NEW SOUTHERN PAPER MILL

This six body, sextuple effect evaporator system was installed in a U-shaped arrangement and was designed to concentrate 428,000 lbs. of black liquor from 14 per cent to 50 per cent solids content, when supplied with 56,000 lbs. per hour of 45 psi steam. The high efficiency of this system (5.52 lbs. of water per pound of steam) was made possible through a new and novel feed arrangement into the evaporators. The first effect evaporator is equipped with 2 inch diameter stainless steel tubes while the other five have welded seam carbon steel tubes.

***For more detailed information write for bulletin #PP 509-1***

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FILTERS / EVAPORATORS / PROCESS EQUIPMENT
CONTRACT MANUFACTURING
*including* HEAVY CASTINGS


## NEWS OF SUPPLIERS TO THE INDUSTRY

### Walter Wolfe, John Nylund Represent N. Y. Color & Chemical

Mr. Wolfe covers Michigan and Mr. Nylund Wisconsin and Minnesota for New York Color & Chemical Co. and also for Atlas Refinery, makers of plasticizers and defoamers. The firms share offices at 110 North Franklin St., Chicago. Mr. Wolfe was supt. for 21 years at MacSimBar Paper Co., Otsego, Mich. Mr. Nylund represented General Dyestuff Co. in the Lake States for many years. Both men retired from their former positions.

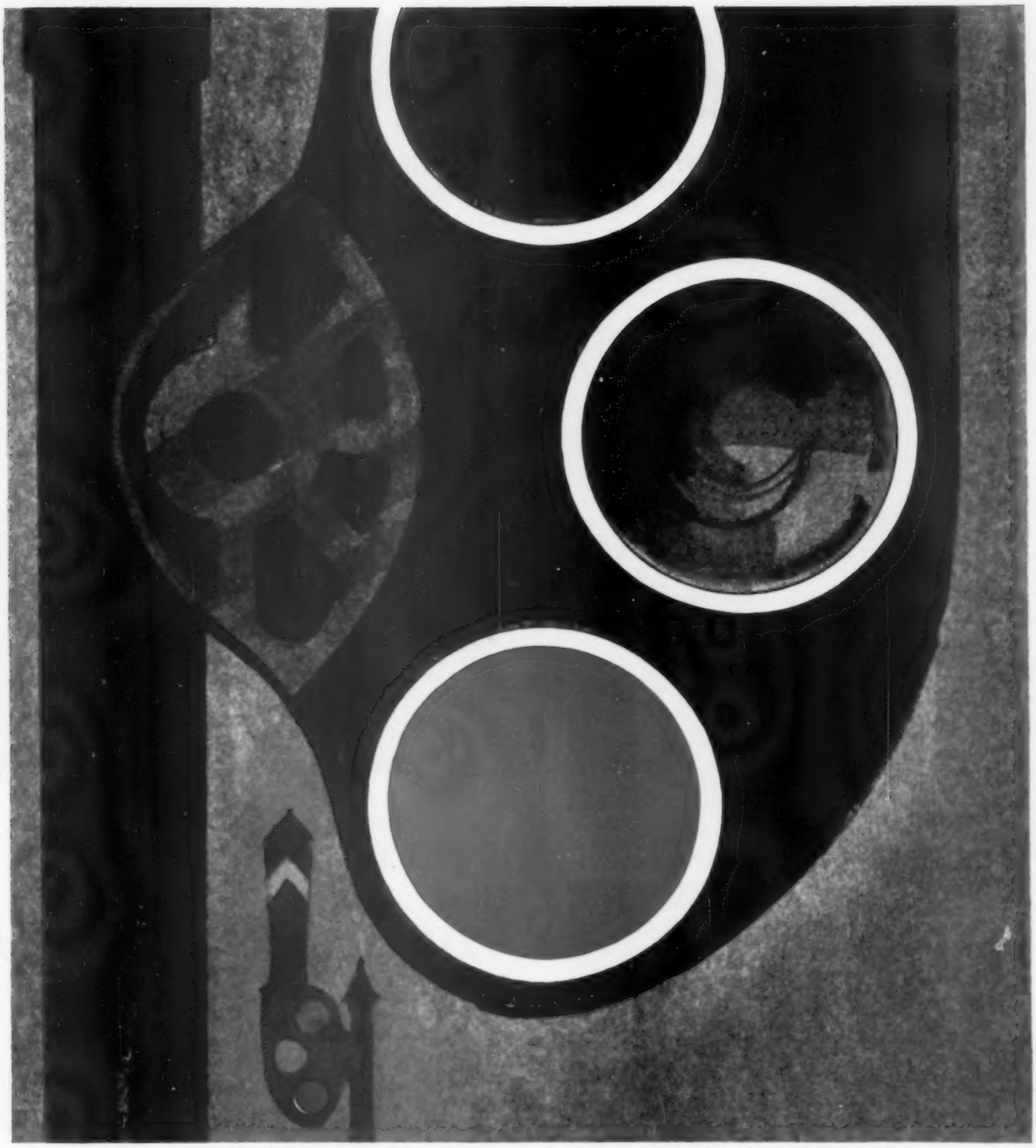
### Paul G. Mansuy, National Sales Mgr., Huyck Felt

Mr. Mansuy succeeds ARTHUR S. HAYESLIP, recently named sales vice pres. He joined the firm, a division of Huyck Corp., in 1952, held the post of asst. sales mgr. prior to his new appointment. Mr. Mansuy headquarters in Rensselaer, N.Y.

Lumley Patterson

### Move Into Key Positions for Signode Steel Strapping Co.

Raymond Lumley will be paper industry manager and Richard G. Patterson will be forest products industry manager for Signode, Chicago steel strapping firm. Their appointments indicate the importance Signode attaches to these field of paper making and wood production. They will coordinate sales & services.



*what have we done for you lately?*

**WHEN YOU HAVE A PROBLEM WITH PULP CHEMICALS, WE CAN HELP. WITH TRAFFIC, FOR EXAMPLE.** Our traffic staff can work closely with yours to make sure that deliveries are made in a way to keep your inventories at a minimum without interrupting production schedules.

This cooperative effort in keeping inventories down has made it possible for our customers to save thousands of dollars in our more than fifty years of business with the pulp industry. Just ask when you want help.

The CAUSTIC SODA BUYER'S GUIDE is a compact source of information for anyone who buys or uses caustic soda. It gives full particulars on physical and chemical properties, shipping methods and containers, the economics of different strengths and grades, and the like. Write for a copy.

**HOOKER CHEMICAL CORPORATION**
1903 Forty-seventh Street, Niagara Falls, New York

Sales offices: Buffalo Chicago Detroit
Los Angeles New York Niagara Falls
Philadelphia Tacoma Worcester, Mass.
In Canada: Hooker Chemicals Limited, North Vancouver, B.C.

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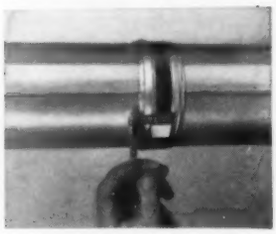
CHEMICALS
PLASTICS

Remove from carton and Metal-On is ready to install. Just snap on pipe and lock in place.

... the specially designed aluminum "snap strap" (containing vapor seal) is snapped on joint ...



... Metal band completes the assembly ... provides perfect joint protection against vapor and weather. Available in many colors, the Metal-On band also serves color coding purposes.

# Two men completed 660′ Metal-On

## New Johns-Manville Metal-On insulation is today's fastest and most efficient way to install high-temperature pipe insulation ... and protective metal jacketing

Metal-On is still new! It is just months since its introduction—yet it has already been accepted by virtually every industry in which high-temperature pipe insulation needs protective metal jacketing.

One reason for this rapid, all-out acceptance is Metal-On's installation economy. A single package product that consists of high-temperature insulation and protective aluminum jacket—Metal-On entirely eliminates separate on-the-job metal application. In

Part of 2100-foot Metal-On installation. New plywood plant of the Winton Lumber Co., Jackson, Cal. Insulation Contractor: Western Asbestos Co., San Francisco.

Metal-On pipe insulation presents no fitting problem. It is cut easily right on the job with either power or hacksaws. Available in long, 3-foot sections in a complete range of pipe sizes through 24" . . . by 3" thickness.

# this insulation job in one working day!

fact—a section of Metal-On can be applied at least as fast as pipe insulation alone.

However important installation speed may be, it is but one Metal-On advantage! For Metal-On also ends guesswork in specifying aluminum alloys and jacket thicknesses. Its jacket measures an ideal .016" thick . . . of a high-quality aluminum alloy selected expressly for superior weather resistance . . . good appearance . . . and resistance to abuse and pitting.

Of course, Metal-On never needs painting. Won't rust. Is impervious to dirt, oils and grime. And, unlike corrugated metal jacketing, Metal-On has no dirt-collecting grooves—its smooth surface stays clean.

Metal-On also provides top fuel savings and accurate temperature control, because its insulating element is Johns-Manville Thermobestos®, finest of all the calcium silicate insulations for temperatures to 1200F. The conductivity of Thermobestos is lowest of all insulations generally used in power and process industries.

To help you compare Metal-On with the insulation you're now using—let us send you the new technical data brochure, IN-217A. Write for it today. Address Johns-Manville, Box 14, New York 16, N.Y.

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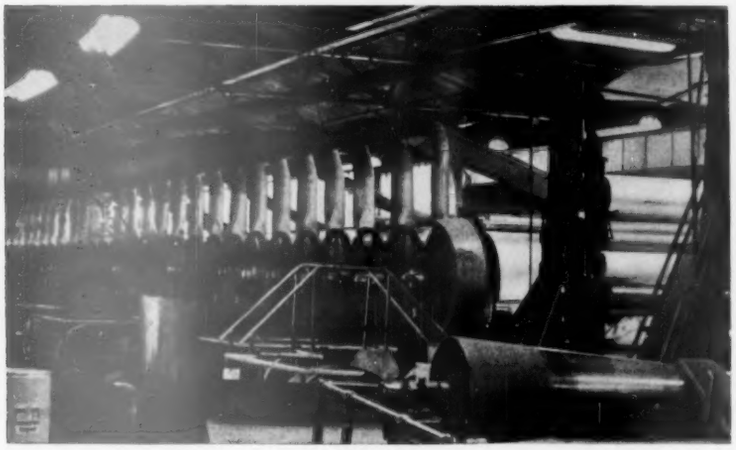
JOHNS-MANVILLE JM PRODUCTS

# HAGAFILM® UPS HEAT TRANSFER IN DRYER ROLLS, REDUCES CORROSION BY 99% at Fibreboard Paper Products Corp.



*Quick case history—reading time 83 seconds*

**THE PLANT:** The Sumner Mill of Fibreboard Paper Products Corp. is a prime producer of paperboard shipping containers. Plant operators know that optimum efficiency is a real requisite in the growing Northwest area.

**THE PROBLEM:** Corrosion and deposition in the plant condensate system was leading to excessive heat losses, equipment outages, pipe and trap replacements. Reduced heat transfer in the sixty-three dryer rolls forced annual chemical cleaning. As determined by test specimens, corrosion was occurring at the serious rate of 80 mg/dm$^2$/day, and the destructive culprits were found to be oxygen and carbon dioxide dissolved in the condensate.

**THE SOLUTION:** Hagafilm was the ideal remedy. Not only does Hagafilm form a non-wettable, protective film throughout the system, but it also cleans out old deposits. As a result, it promotes drop-wise condensation, extremely desirable on heat transfer surfaces such as dryer rolls.

**RESULTS:** Corrosion in the system has been reduced by 99% and is now negligible (0.8 mg/dm$^2$/day). Iron oxide deposits in the boiler have been eliminated. Trap cleaning and replacement have been substantially reduced. Temperature drops through the walls of the dryer rolls have been reduced from 15-20°F to 5°F which is normal for clean rolls. Annual cleaning costs have been eliminated.

**FOR FULL INFORMATION** on how Hagafilm can solve your corrosion problem safely, quickly and economically, write for bulletin 410-12-7 or contact:

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**CHEMICALS & CONTROLS, INC.**
HAGAN BUILDING, PITTSBURGH 30, PA.

**HAGAN** DIVISIONS: CALGON CO.– HALL LABORATORIES– BRUNER CORP.

James Cross

Manley Luthgens

### Tom James Field Personnel Mgr. for Nalco Chemical Co.

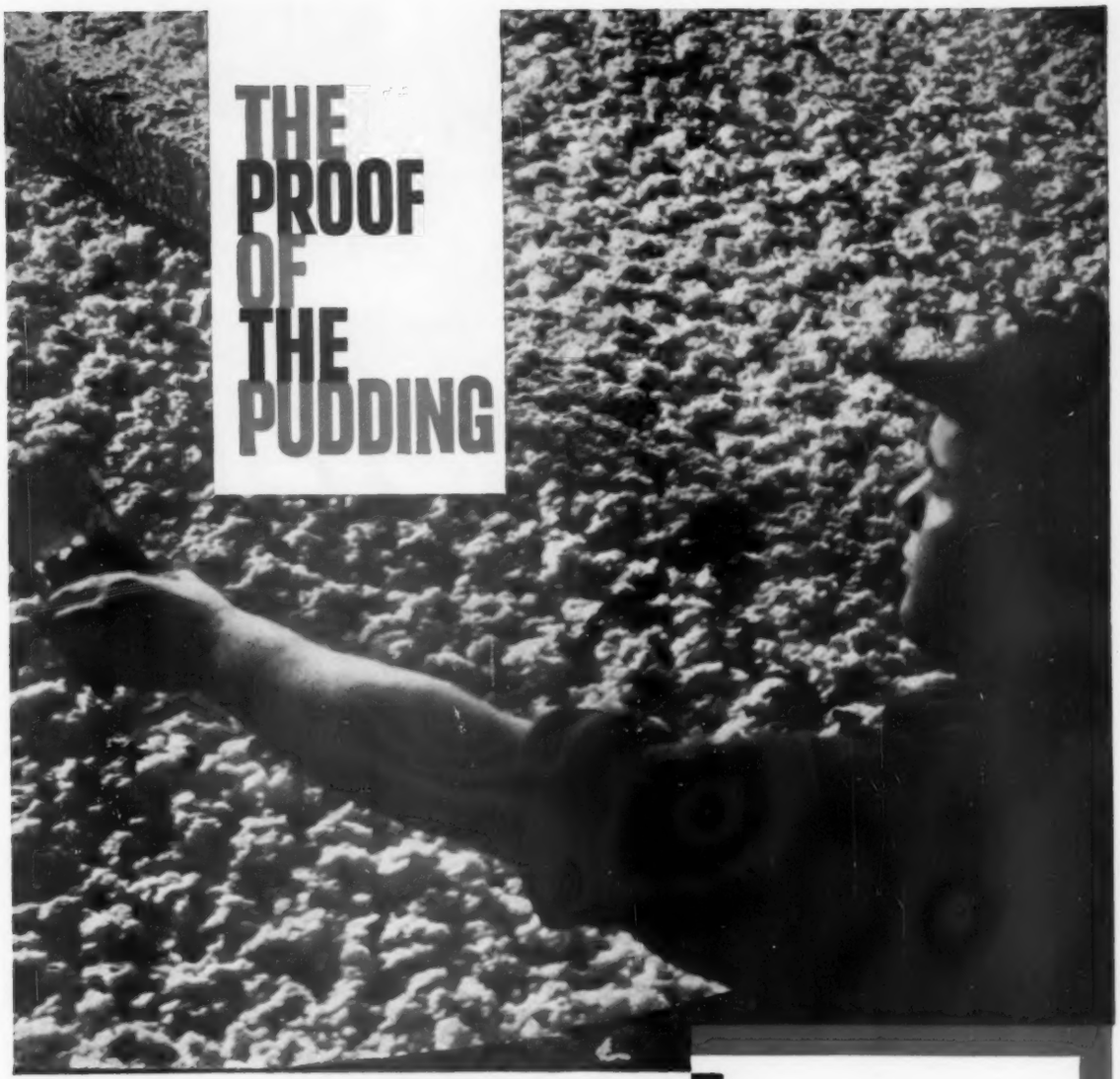
Appointment of Mr. James to this post in the Industrial div. of Nalco, Chicago, is announced by L. Robinson, gen. mgr. of the division. Mr. James formerly was mgr. of the division's Pacific Northwest district, with headquarters in Portland, Ore.

At the same time it was reported that W. V. Cross is being transferred from the Wisconsin district to succeed Mr. James in Portland. J. A. Manley replaces Mr. Cross as Wisconsin mgr.

Another Nalco appointment is that of Dr. Manfred W. Luthgens who becomes group leader in papermaking chemicals research at Chicago. Born and educated (in wood chemistry) in Germany, Dr. Luthgens was formerly research group leader for West Virginia Pulp and Paper Co.

### James H. Beaumont, Asst. Mgr., A. E. Staley Mfg. Co. Corn Division

In announcing Mr. Beaumont's promotion, Staley President E. K. Scheiter said expanding activities of the company in starches, syrups, proteins and chemical products call for a broader administrative base to develop marketing programs. Mr. Beaumont has been public relations director of the Decatur corn, soybean and chemical processing concern since 1955.




The proof of THIS pudding is in the pulp it produces! And where pulp is concerned, there is none superior to that made by Howard Smith.

This is a "beater", one of many such machines used to develop the maximum strength of the pulp. Sizing and colour also are added at this point, according to formula scientifically worked out in Howard Smith laboratories.

When you use the best pulp possible to make your paper, you can't help but produce a better product. So always specify Howard Smith pulp . . . the proof of its superiority is in the paper it produces.

Howard Smith
PAPER MILLS LIMITED

**PULP SALES DEPARTMENT**
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**Progressive paper companies rely on these quality pulps:**

**SEAGULL**
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**WINDSOR**
Unbleached Kraft

MANUFACTURERS IN CANADA OF HIGH QUALITY WOODPULPS

# What it means to be the world's largest producer of

# salt cake

**DEPENDABLE YEAR-IN, YEAR-OUT, PRODUCTION**

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**BRINE RESERVES FOR GENERATIONS TO COME**

**FAST DELIVERY OF ANY QUANTITY, ANY TIME, ANYWHERE**

TRONA* is in a class by itself as the world's largest producer of Sodium Sulphate for the pulp and paper industry and other important chemical markets. Big tonnage production, backed up by huge brine reserves on Searles Lake, means the ability to stockpile large inventories of high purity finished product. Constant movement of carload shipments to all major consuming areas means that cars can be rerouted at any time to take care of emergency needs. These advantages add up to the kind of service that buyers of Salt Cake can depend on. Make TRONA *your* prime source of supply... it pays!

Look for an early announcement of the start-up of American Potash & Chemical Corporation's new sodium chlorate plant at Aberdeen, Mississippi, constructed to supply the rapidly growing southern pulp and paper industry.

TRONA

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**American Potash & Chemical Corporation**

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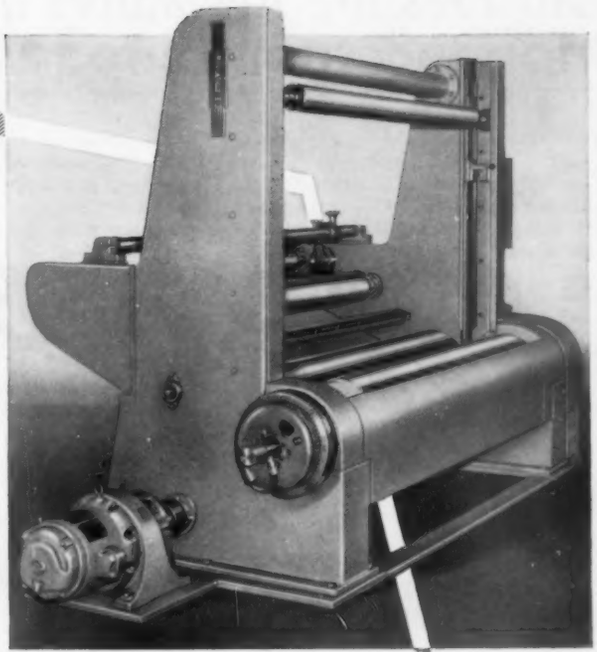
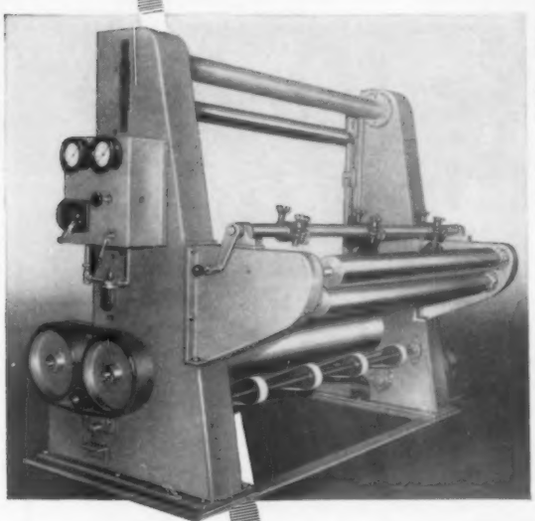
THORIUM • CERIUM • RARE EARTHS • *and other diversified chemicals for Industry and Agriculture*

# a new two-drum SLITTER REWINDER for the paper converting industry



*Designed for . . .*



1. High speed production.
2. Winding and slitting of rolls up to 60" diameter and to 84" width.
3. Ease of operation:
   a. Automatic threading.
   b. Slitters and spreader readily adjustable.
   c. Rider roll raised and lowered pneumatically.
4. Pneumatic control gives flexible and easy tension adjustment.

Heavy box frame construction with large rolls for minimum deflection.

A TRULY DEPENDABLE WINDER WITH MINIMUM DOWNTIME AND MAINTENANCE

THE WORLD'S LARGEST MANUFACTURER OF CALENDER ROLLS

**B. F. PERKINS & SON, INC.**

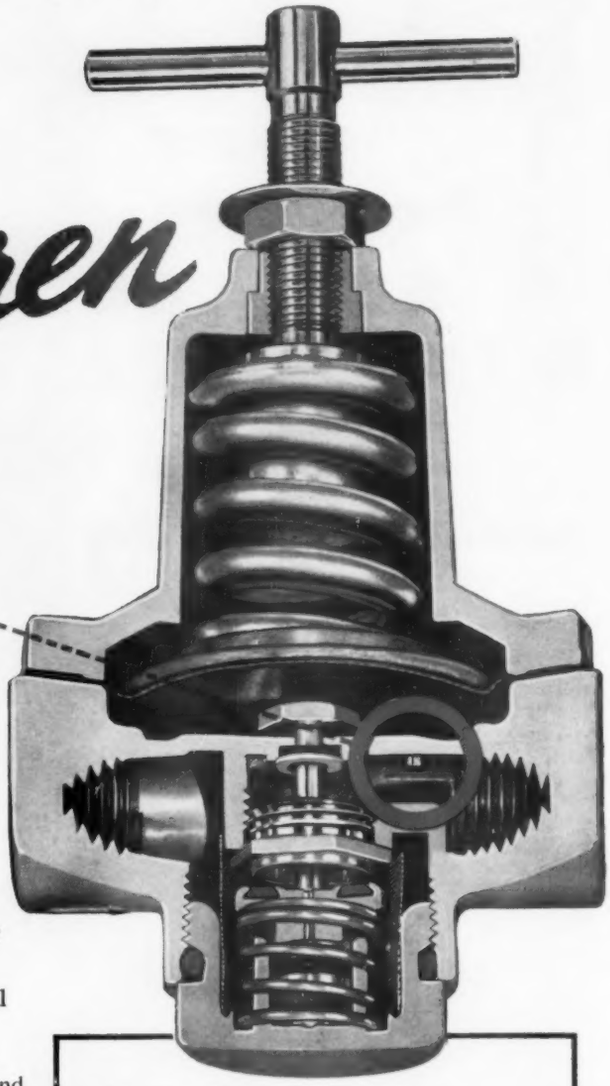
HOLYOKE • MASSACHUSETTS

*All Pressure Regulators are not alike*

# Norgren

## Baffle and Siphon Tube Construction

*provides more uniform regulated pressure as flow demand changes*



In the ideal pressure regulator there would be no change in the regulated pressure no matter how wide the variations in the flow rate.

Norgren Pressure Regulators approach this ideal by providing a baffle and siphon tube feature. This increases the sensitivity of the valve to changes in the flow rate through the regulator and provides better performance and a more uniform regulated pressure over a wide range of flow rates.

The baffle protects the diaphragm from pressure shock and abrasive action. This gives you longer regulator life, more dependable operation and minimum maintenance.

**For complete information on all your regulator needs, ⅛" to 2", call your nearby Norgren Representative listed in your telephone directory- or WRITE FACTORY FOR DESCRIPTIVE LITERATURE.**

***Norgren Pressure Regulators give you these important features:***

- Balanced Valve Construction — improved regulator performance
- Large Nylon-reinforced Buna N Synthetic Rubber Diaphragm — long service life
- Baffle Plate and Siphon Tube — increased accuracy
- Large Passages and Valve Openings — large flow capacity
- Easy servicing while still on air line
- Flexible Valve Pin — assures better seating

FOUNDED IN 1926

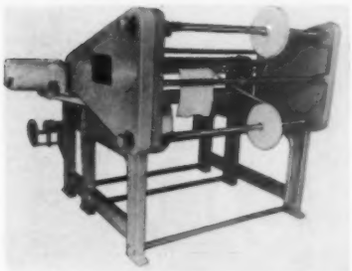
## C. A. NORGREN CO.

3458 SOUTH ELATI STREET • ENGLEWOOD, COLORADO

2601

# New Equipment Section

## Slitter Rewinder
**. . . Uniform Density Assured**



*Applications:* For slitting or trimming rewound rolls of paper or board.
*Advantages:* The duplex shear-type unit (Model CDH-40) can be equipped with razor blade or scope type slitters (as well as standard shear). Patented principle permits each rewound roll to operate independently after slitting, thereby compensating for caliper variation and assuring uniform density.
*Specifications:* Unit will handle web of up to 90 in. Standard models include: edge guides and tension control and either a four-speed quick-change motor drive or Reliance variable-speed drive.
***Supplier:*** **Appleton Machine Co. (Doven div.), 618 S. Oneida, Appleton, Wis., Tel: RE 3-7361.**

## Core and Shaft Puller
**. . . Companion Dolly Available**

*Applications:* For pulling cores and shafts from jumbo rolls.
*Advantages:* Unit is designed for installation in existing plant areas and is completely adjustable. The core puller is designed to save labor and prevent core and material damage. Claimed to be inexpensive, it can be maintained by plant personnel. Available is a hydraulically-operated shaft dolly to raise or lower core to desired height, and to handle heavy cores when shafting up rolls in converting operations.
*Specifications:* The core puller requires 10- by 32-in. floor space and will handle rolls 34 to 84 in. in dia.
***Supplier:*** **Horton Mfg. Co. Inc., 1179—15th Ave. S. E., Minneapolis 14, Minn., Tel: FRanklin 1-5931.**

## Time-Cycle Controller
**. . . Increased Flexibility**

*Applications:* For controlling processes based on timed operations.
*Advantages:* The controller is said to provide increased flexibility and can time control as many as 10 variables for applications such as batch processes. Ten pilots (pneumatic, electric or a combination) may be operated simultaneously. Each pilot can perform up to 24 operations. The pilots are said to be easily changed or added.
*Specifications:* Dogs set on the periphery of the timing disc determine the timing of pilot operations. Intervals between operations can be as brief as 4 sec., and timing discs range from 0-15 min. to 0-360 min. Variations of the basic model offer standard pneumatic pilots, high-capacity pneumatic pilots, spdt switches, dpdt switches and special-purpose switches.
***Supplier:*** **Bristol Co., Waterbury 20, Conn. Tel: PLaza 6-4451.**

## Proportioning Pump
**. . . for Corrosive Chemicals**

*Applications:* For metering such chemicals as 66° Baumé sulfuric acid, sodium hydroxide, etc.
*Advantages:* The electrically-driven Chem-O-Feeder is constructed of corrosion-resistant materials and features adjustable stroke length while in motion. The unit is claimed to be easily installed and takes suction directly from the shipping container.
*Specifications:* The positive displacement pump (Model 1331) has a range of more than 4:1 with a capacity to 0.7 gph into discharge pressures to 100 psig.
***Supplier:*** **B-I-F Industries Inc., 345 Harris Ave., Providence 1, R.I., Tel: GAspee 1-4302.**

## Centrifugal Air Compressor
**. . . Features Integral Intercoolers**

*Applications:* To furnish "100-lb. air" for oxygen plants, centralized air systems and other industrial air applications.
*Advantages:* The multi-stage units feature integral intercoolers between each stage of compression. Single-case construction plus base-mounting for the intercoolers cuts floor space requirements as much as 40% over machines of comparable horsepower. Side connections permit up or down piping and eliminate axial inlets. Bearing supports are cast integral with the case. Back-to-back impeller design provides inherent thrust balance. Design is said to permit easy access to rotor and other parts for inspection or maintenance. Centrifugal design is said to assure steady flow and eliminate the need for large bottles or receivers to further minimize installation expense. Simple throttling device provides regulation over a wide range of stable operation. Lube oil contamination of the compressed air stream has been eliminated.
*Specifications:* In the Clark H line six case sizes are available, with horsepowers ranging from 1,000 to 8,000 bhp and capacities from 5,000 to 38,000 cfm.
***Supplier:*** **Clark Bros. Co., Olean, N.Y. Tel: 8293.**

## Electric Fork Truck

**. . . with Speed Control System**

*Applications:* For in-plant transport of raw materials and finished product.
*Advantages:* This new line of electric-powered fork trucks features a speed control system (Acro-Smooth) that is said to provide "smooth-as-silk" travel plus an infinite variety of speeds. It is claimed that maintenance has been reduced by the elimination of speed contactors, complicated master switches and resistance boxes. Accurate "inching" has been coupled with fast acceleration. Full power is attained even at slow speeds for safe starting on ramps.
*Specifications:* The F-50T includes 4,000-, 5,000- and 6,000-lb. capacity models. The right-angle stacking aisle is only 93 in. plus the length of the load; while the minimum intersecting aisle is less than 6 ft. Top travel speed is 8 mph. All models feature 20% higher lift speeds, the full-load lifting rate being 40 fpm.
***Supplier:*** **Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 15, Ohio, Tel: HEnderson 8250.**

## Fresh Water Shower

**. . . Fast, Easy Nozzle Changes**

*Advantages:* Econo-Miser is said to eliminate soldering the nozzles in operating position. Manufacturer claims simplicity in design and parts provides "exceptional economy in purchase, operation and maintenance." Spray disc nozzles can be changed in a matter of seconds entirely by hand. Unit permits use of fan, cone or needle spray. Foreign particle plugging is at a minimum, as nozzle bushings project well inside the pipe.
*Specifications:* Simple disc-type nozzle design consists of a threaded brass adapter containing a thin spray disc that is held firmly in operating position by tension from a light-pressure spring secured by a stainless steel pin. Operation is efficient at all pressures up to 300 psi.
***Supplier:*** **Lodding Engineering Corp., 73 Beacon St., Worcester, Mass., Tel: PLeasant 6-5173.**

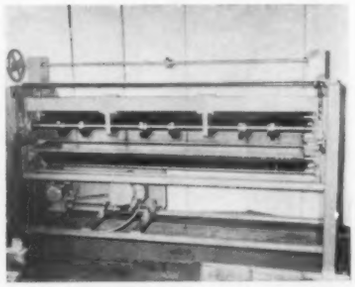
## Angle Control Valves

**. . . with Improved Venturi Effect**

*Applications:* For control of slurries, viscous or flashing fluids.
*Advantages:* The improved venturi effect is said to reduce turbulence and cavitation.
*Specifications:* The valve is pneumatically operated and has both a bolted tailpiece—permitting easy access to the clamped-in seal ring—and a bolted bonnet that permits plug and stem replacement without removal of the body. A pneumatic diaphragm actuator provides air-to-open or air-to-close valve action. Valves are made of carbon steel and Type 316 stainless in sizes 1 to 6 in. with body ratings of 600 lb. They are available with full capacity or 40% capacity trim.
***Supplier:*** **Minneapolis-Honeywell Regulator Co., Valve div., Fort Washington, Pa.**

## Strip Roller Coater

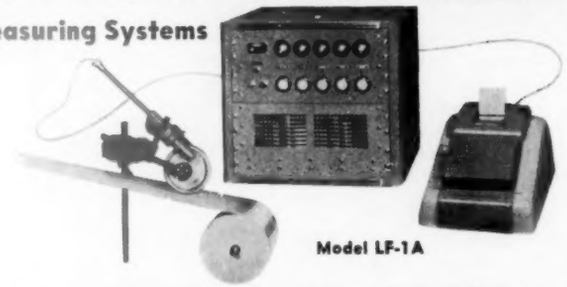
**. . . 12- to 108-in. Rolls**



*Applications:* For adhesive application in given strips and patterns in the carton, paper and wood industries.
*Advantages:* Strip rolls are adjustable for various patterns and can be inter-


POST DECITRON ELECTRONIC PRODUCTS

Measuring Systems



Model LF-1A

Now! . . . a permanent record of lineal footage. The Post LF-1A Lineal Footage System combines the accuracy of proven electronic equipment with a visual "Clary" readout.

Ideal for accurate measurement for manufacturers of wire, paper, textiles and sheet metals. Sensing elements can be furnished so that measurements can be made in 1/16ths of an inch, 1/8ths, 1/4's or in full inch increments.

Write for literature.

Decitron

ELECTRONIC PRODUCTS DIVISION

Post Machinery Co. | 175 Eliot St., Beverly, Mass.

# THIELE KAOLIN

## SUPERIOR CLAYS

for FILLING or PAPER COATING

- **Controlled Particle Size** • **Excellent Color**
- **Standardized Low Viscosity** • **High Brightness**

Thiele Water-Washed Clays are mined from vast holdings in the heart of Georgia's clay belt, carefully tested and controlled while being processed at Thiele's modern plant. Two spray drying plants assure coating clays that will provide EASIER MAKE-DOWN—IMPROVED HANDLING—LOWER MOISTURE CONTENT—LOWER SOLUBLE SALT CONTENT—MORE UNIFORMITY—LOWER ABRASION.

Write for full information and sample of Thiele Kaolin Coating or Filler Clay for your particular use.

*Thiele Kaolin Company*

P. O. BOX 270 • SANDERSVILLE, GA.

**STARCHES • DEXTRINES • GUMS**

For all phases of paper manufacturing and converting... beaters, tub sizing, coatings, calendering, corrugating and laminating.

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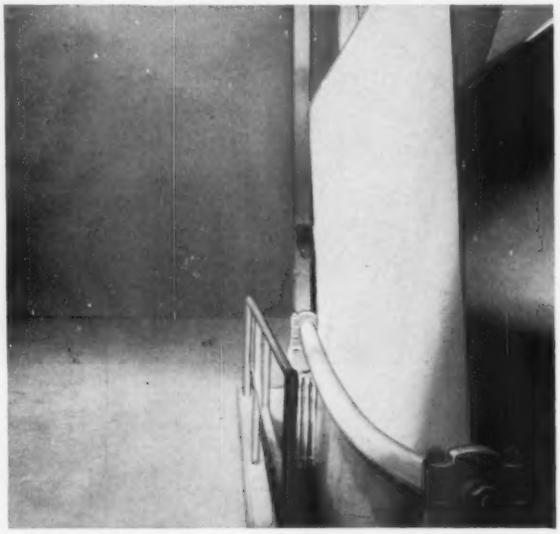
ST. LOUIS, MO., 721 Pestalozzi St.
NEW ORLEANS, La., 314 Girod St.
GREENSBORO, N. C., 3226 James Place

How Whippany Paper Company, Inc.

## *KEEPS COSTLY FELTS TROUBLEFREE from "TOP" to "BOTTOM"...*



Typical application of MOUNT HOPE ROLLS on top finishing felt.

with *Mount Hope* **ROLLS**

In the production of kraft paper for 9 pt. test liner, Whippany Paper Company, Inc., Whippany, N. J., runs board 234 inches wide at 500 to 750 F.P.M. on one of its cylinder machines. MOUNT HOPE ROLLS mounted on the machine not only assure top efficiency and service life from the costly, extra-wide felts used, but simultaneously protect the high quality of the board.

On the top finishing felt MOUNT HOPE ROLLS preserve elasticity and nap, minimize dangers of "picking" or "checking". On the bottom wet felt, they keep the weave open, restore the felt to full width on each revolution, keep the seam straight. On both felts, they assure even water drainage. Result: consistently smooth, economical production.

A MOUNT HOPE Engineer will be glad to show you how MOUNT HOPE ROLLS will protect quality, productivity, and operating economy in your mill. Simply fill out and mail coupon.

**MAIL THIS COUPON NOW! . . .**

Mount Hope

**MOUNT HOPE MACHINERY COMPANY**
66 Fifth Street Taunton, Mass.

Please have a MOUNT HOPE Engineer show me where MOUNT HOPE ROLLS can improve the economy and efficiency of my operations.

Plants at Taunton, Mass. and Charlotte, N. C.

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TITLE _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

# *Should you . . . or shouldn't you use pallets?*

ELIMINATING PALLETS . . . *appears* to offer obvious savings. The many new attachments in use for this purpose makes the idea even more attractive. However, many possible pitfalls face even the experienced materials handling man.

YOUR DECISION should be based on a careful analysis by specialists who have had broad experience with such conversions. Your local Clark dealer, for example, is able to offer you not only his own specialized knowledge, but in addition, that of a team of Clark engineers who have dealt with countless companies on the same subject.

THE COMBINATION of specialized knowledge, a complete line of equipment (including *all* power types), plus a full line of job-engineered attachments, gives your Clark dealer an opportunity to present you with a completely unbiased, and carefully documented recommendation.

REDUCING COSTS is of prime consideration. The elimination of pallets in your operation may prove to be the quickest, soundest way of accomplishing this objective. It's worth investigating. Contact your local Clark dealer, listed in the Yellow Pages under "Trucks, Industrial" or, if you prefer, write: Engineering Aid, Clark Equipment Company, Battle Creek, Michigan.

CLARK® EQUIPMENT

Printed in U. S. A.

changed for wide or narrow glue strips as desired. Openings in the upper coating roll assemblies are adjustable to 2 in. through the gear-elevating mechanism with single handwheel control. A variable speed drive is available with 3:1 ratio.

*Specifications:* Coating assembly consists of three rolls: a doctor roll, a transfer roll and a strip roll. The adhesive is carried in the crotch between the doctor and transfer rolls. Thick or thin coatings can be applied by a simple adjustment of the openings between these two rolls. The unit is available with rolls from 12 to 108 in. length.

*Supplier:* **Union Tool Corp., Warsaw, Ind.**

### Cutter Holder and Cutter
**. . . to Eliminate Annular Rings**

*Applications:* For installation on Langston slitters and winders; (standard equipment on all new units).

*Advantages:* Annular rings in rewound rolls are said to be virtually eliminated "by slitting more accurately than ever before possible". Equipped with a new type locking device, the design can be secured tighter to the slitter shaft, yet is said not to suffer any distortion of shape in locking up. It can be easily moved sideways on the shaft as required.

*Supplier:* **Samuel M. Langston Co., Sixth and Jefferson Sts., Camden 4, N.J., Tel: WOodlawn 4-6430.**

### Low-Voltage Motor Controls
**. . . Protective Options**

*Applications:* For low-voltage (600v and below) motor control.

*Advantages:* The new line is offered with three starting options: (1) full voltage; (2) reduced voltage, and (3) part winding. The small cubicles take less floor space than conventional units and are suitable for installation in low-ceiling areas and against walls. The service accessibility is said to be much improved. Controls are offered in the following protective options: (1) isolating switch only; (2) isolating switch and current-limiting fuses; (3) circuit breaker only, and (4) circuit breaker and current-limiting fuses. (For synchronous motor applications, a field failure circuit is provided.)

*Specifications:* (1) Formed steel, rigid enclosures; (2) all front connected and front accessible components; (3) in-channel wiring.

*Supplier:* **Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.**

### Submersible Motor
**. . . More Horsepower for Size**

*Applications:* To drive deep-well turbine pumps in industrial water supply applications.

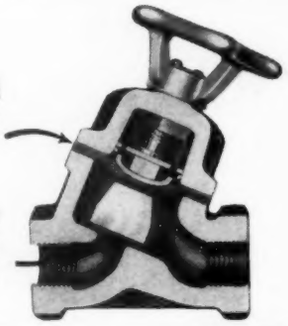
*Advantages:* The 4-in. unit is said to provide the highest horsepower capacity now available in a motor of that diameter. This is achieved by using an outside wound stator protected by a high-dielectric insulation system, by encapsulation in a chemically inert plastisol and by sealing in stainless steel. Shaft height on the motor can be adjusted to center pump impellers for optimum pump efficiency. Design is said to insure reserve thrust capacity and long bearing life. Complete corrosion resistance is claimed.

*Specifications:* Ratings offered in single-phase construction are from 1½ to 5 hp, in three-phase construction from 1½ to 7½ and 3550 rpm.

*Supplier:* **Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis., Tel: HUmboldt 1-6000 (ext. 484)**


with ROCKWELL "D-D" VALVES
you're Sure - you're Safe!

The BEST for
• CORROSIVE
• ABRASIVE
• VACUUM
• DIFFICULT
Service

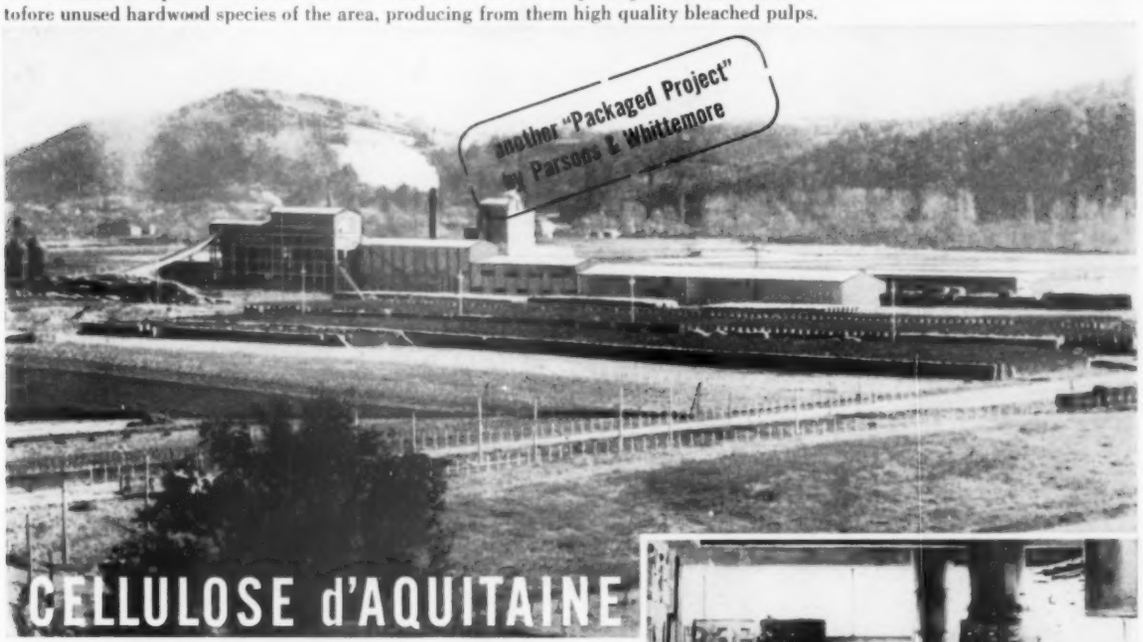



**OPERATION** Disc absorbs action of fluid flow and pressure, and cuts off fluid on closure. Diaphragm merely seals mechanism from valve body. Failure of diaphragm does not prevent closing the valve. Hence—longer diaphragm life—less maintenance. Oversized ports for higher capacity.

**CONSTRUCTION** Valve bodies of cast iron, stainless steel, or lined with rubber, Neoprene, Penton, other plastics or glass. Diaphragm discs of rubber or Neoprene. Flanged — ½" to 6" sizes; screwed or union ends — ½" to 2" sizes. Write for Bulletin 800C.

W. S. ROCKWELL COMPANY
2510 ELIOT STREET • FAIRFIELD, CONN.
VALVES — *Butterfly • Slide • Gate • Check • Diaphragm • Plastic*

The Cellulose d'Aquitaine mill in Southern France consumes as its principal raw material heretofore unused hardwood species of the area, producing from them high quality bleached pulps.



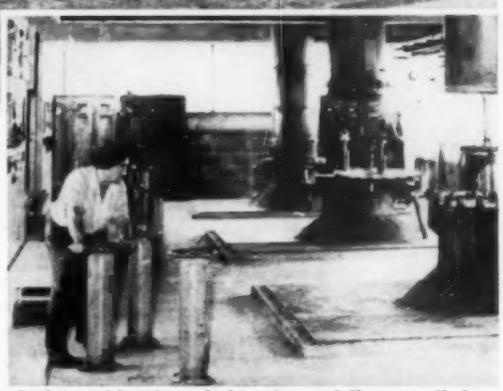

CELLULOSE d'AQUITAINE

# First pre-hydrolysis kraft pulp mill in France

Making France self-sustaining in the production of nitrating grades of cellulose, the mill of Cellulose d'Aquitaine, St. Gaudens, has been in operation since the summer of 1959 and produces up to 120 tons of nitrating pulp or 170 tons of bleached paper grade pulp per day.

The Parsons & Whittemore-Lyddon Organization had full responsibility for design and construction of the plant. It is but one of fourteen mills now in various stages of development for which the Organization provides technical supervision, complete equipment and other important services under a global contract.

Parsons & Whittemore-Lyddon's staff of renowned pulp and paper making experts is backed by the Organization's international machinery manufacturing and sales facilities. Our experts are prepared to assist you in planning, designing, financing, constructing, equipping and operating pulp and paper mills in any country having suitable wood or agricultural fibers. For full information on any or all of these services, write to our nearest office.



Cooking of beechwood chips is carefully controlled on this digester operating floor. Three of the four digesters are shown. All of them are constructed with special alloy lining to permit a pre-hydrolysis cooking stage at extremely low pH values.

The 136" wide Fourdrinier pulp drying machine, built by Black-Clawson, includes cantilever design, modern vacuum equipment and hydraulic press controls.

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*World leaders in the development of pulp and paper mills for the use of local fibers*

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*By the*
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Market Wood Pulps Since 1882

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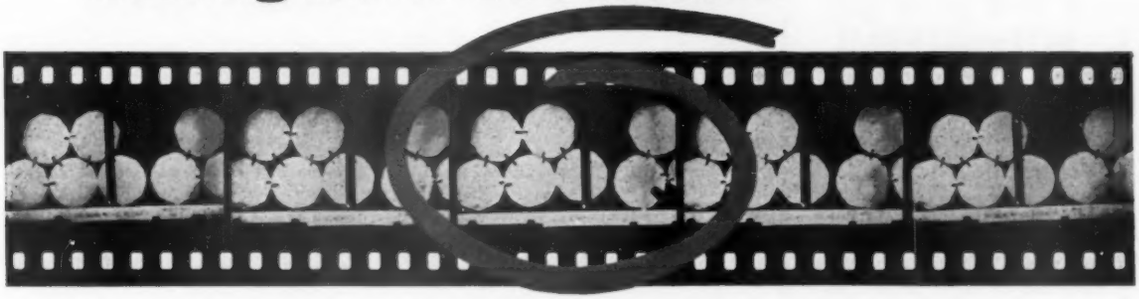
# Waiting for... WHAM!



1600-pound rolls of paper bounce several inches into the air when impacted in Signode's open-sided test car. Methods developed by tests like these save thousands of dollars for Signode customers—and *their* customers—by reducing damage losses and cost of dunnage.

Signode offers unparalleled experience and test facilities to help shippers reduce damage to shipments by rail, highway, or water...of paper in rolls, on bilge or on end, or of paper on skids or expendable pallets. We would like very much to give you a hand toward better car-loading. It will pay you to call the Signode man near you, or write:

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Meet Huyck's
PLATT

Jim Platt, Huyck's Chief Felt Designer, is largely responsible for the continuing improvement in performance characteristics of all types of Huyck felts. By working closely with Huyck Field Service Engineers, he and his group of experienced designers, use the many Huyck developments in felt construction and chemical treatments to provide better felts for all papermakers.

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## MEETING DATES CALENDAR

March 9-11
**12th Annual Forest Management Field School ("Prism Cruising in Forest Management Inventories")**
Univ. of California Agricultural Extension Service and School of Forestry, Berkeley, Cal.

March 14-18
**16th Annual Conference of National Assn. of Corrosion Engineers**
Dallas, Texas

March 15
**Ohio TAPPI (Two-Phase Flow in a Wet Web)**
Manchester Hotel, Middletown, Ohio

March 22-23
**Folding Paper Box Assn. of America (Annual Meeting)**
Ambassador Hotel, Los Angeles, Cal.

March 26
**Philadelphia Conference of the Graphic Arts Industry**
Benjamin Franklin Hotel, Philadelphia, Pa.

March 27-30
**National Paper Trade Assn. (Annual Meeting)**
Waldorf-Astoria, New York, N. Y.

March 29
**Golden Gate District TAPPI (Recent Advances in Materials Handling)**
Dinner Cottage Restaurant, San Leandro, Cal.

April 6-7
**Ninth Annual Forestry Symposium**
Louisiana State Univ. School of Forestry, Baton Rouge, La.

April 14
**Ohio TAPPI ("High Polymers")**
Miami Univ. Student Union, Oxford, Ohio

April 23
**Michigan PIMA (Ladies Night)**
Hotel Harris, Kalamazoo, Mich.

April 28-30
**Pacific TAPPI and Pacific Coast Technical Section, CPPA (joint meeting)**
Bellingham, Wash.

April 29
**New York-Canadian PIMA ("Pulping and Deinking")**
Sheraton-Syracuse Inn, Syracuse, N.Y.

May 2-3
**Instrument Society of America Electrical Safety Instrumentation Symposium**
Wilmington, Del.

May 9-12
**Instrument Society of America Instrument-Automation Conference and Exhibit**
Civic Auditorium and Brooks Hall, San Francisco, Cal.

May 10
**Golden Gate District TAPPI (True Memorial Lecture)**
Hotel Clarmont, Berkeley, Cal.

May 13-14
**Pennsylvania-New Jersey-Delaware PIMA**
Hotel duPont, Wilmington, Del.

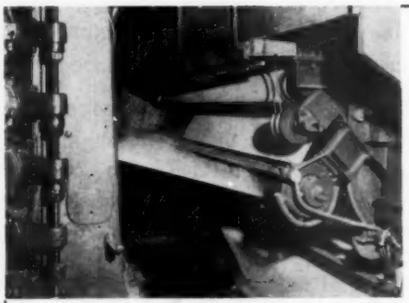
May 23-25
**TAPPI Coating Conference**
Edgewater Beach Hotel, Chicago

May 23-26
**American Society of Mechanical Engineers (Design Engineering Conference)**
Coliseum, New York, N. Y.

June 7-8
**Waste Paper Symposium (Waste Paper Utilization Council)**
Conrad Hilton Hotel, Chicago

June 7-9
**National PIMA Annual Convention**
St. Francis Hotel, San Francisco, Cal.

June 14-16
**TAPPI Bleaching Conference**
Edgewater Beach Hotel, Chicago



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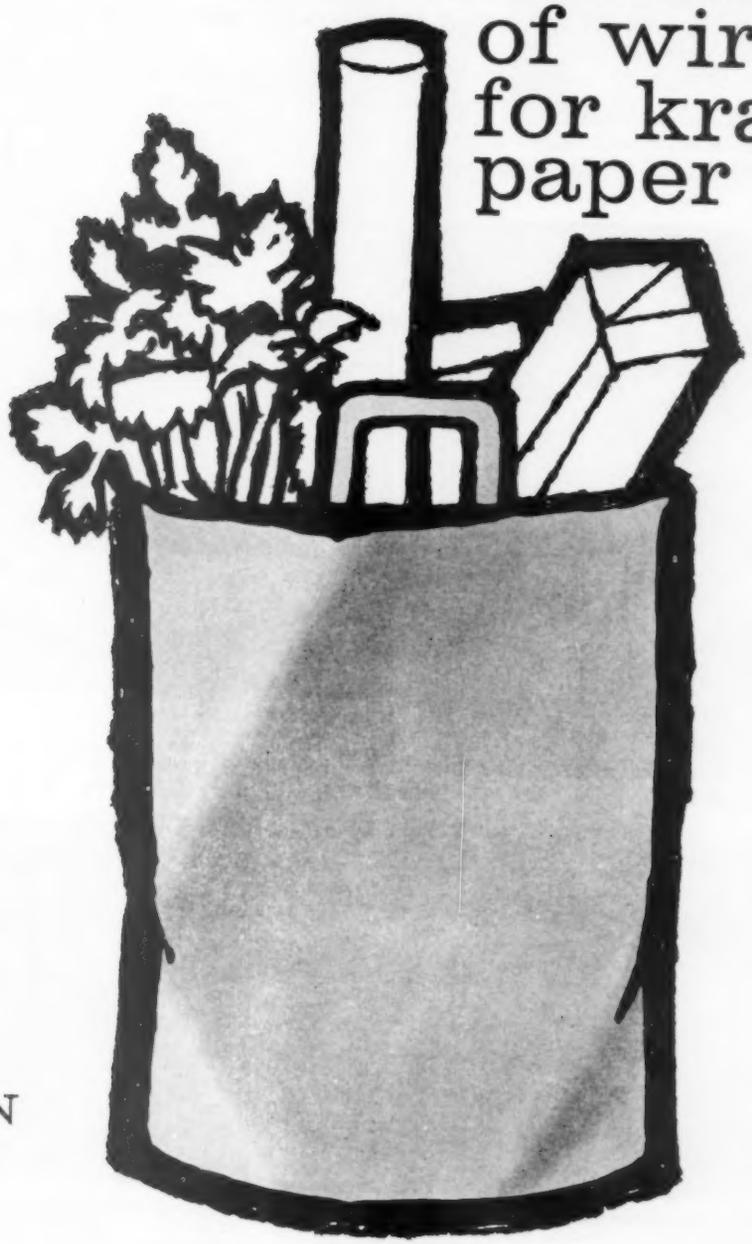

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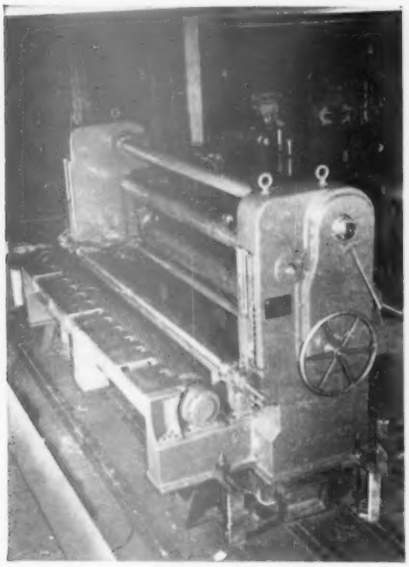
PAPER DIVISION

# DOMINION ENGINEERING COMPANY LIMITED

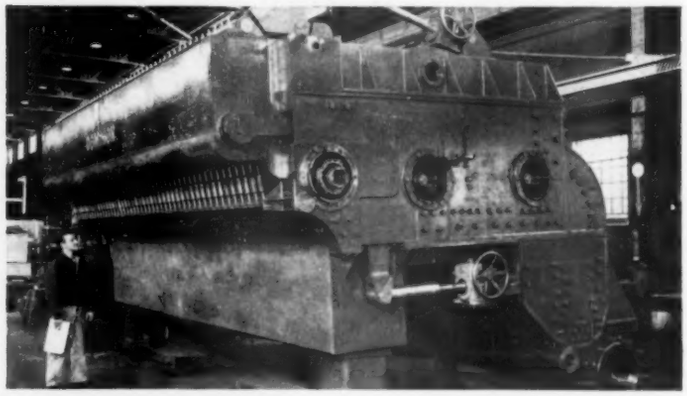
Head Office & Works: LACHINE, QUE., CANADA—P.O. BOX 220, MONTREAL, QUE. Branch Offices: TORONTO • WINNIPEG • VANCOUVER

## PULP AND PAPER MAKING MACHINES AND COMPONENTS OF ALL TYPES

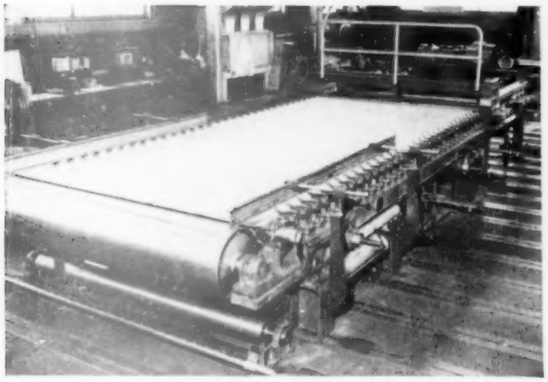
Dominion Engineering designs and builds complete paper, pulp, board and specialty machines of all types, and components particularly suited for modernization and modification of existing machines, including Pressure Head Boxes—Fourdriniers—Couch and Press Sections—Suction Rolls—Dryers—Calenders—Reels—Winders and Rewinders—Mechanical Drives—Pulp Grinders—Electric Steam Generators.



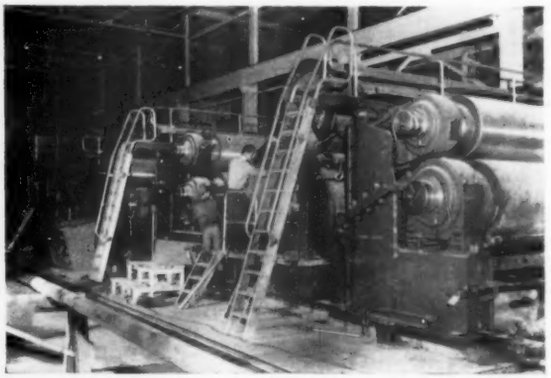
**DOMINION WINDERS AND REWINDERS** cover the full range from small low speed rewinders to the highest speed news machine winders. Designed to ensure maximum stability under all operating conditions, they incorporate automatic riding roll load control, readily adjustable slitters of either the shear cut or score cut type, a variety of paper unloading arrangements and special winder drum fluting to reduce noise.



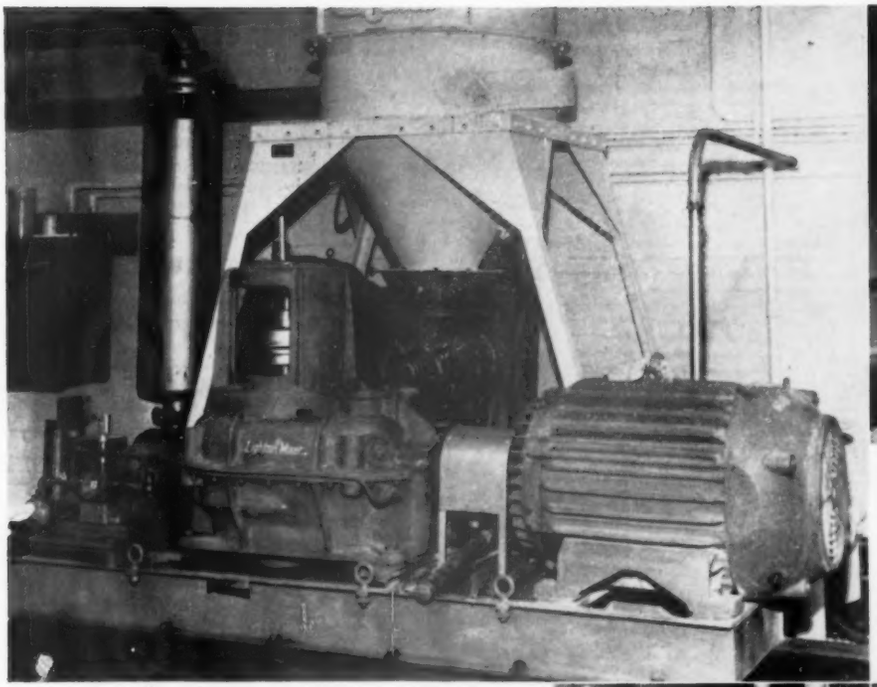
**DOMINION PRESSURE HEADBOXES** incorporate such advanced design features as: fully adjustable slice; parabolic cross-flow distributors and hydraulic rectifier roll drives. Dominion Pressure Headboxes are installed on many fine paper and newsprint machines to increase production and improve product quality.



**DOMINION FOURDRINIERS** are designed and built to mill requirements: fixed or removable, shaking, which incorporate the patented Torsion Bar Suspension, or non-shaking, etc. Dominion Fourdriniers reduce wire changing time. Most important, complete designing and manufacturing control by Dominion Engineering means total responsibility and service to users of Dominion equipment.



**DOMINION SUCTION ROLLS** benefit from many years of experience and development and incorporate such features as open ended design for accessibility combined with anti-friction bearings, floating suction box tops and drilling patterns designed to reduce noise level and shadow marking. The shells can be provided in all sizes in bronze or forged stainless steel, the latter permitting the high line pressures available from Dominion oil-hydraulic loaded press sections.

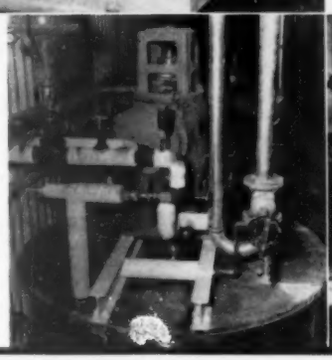


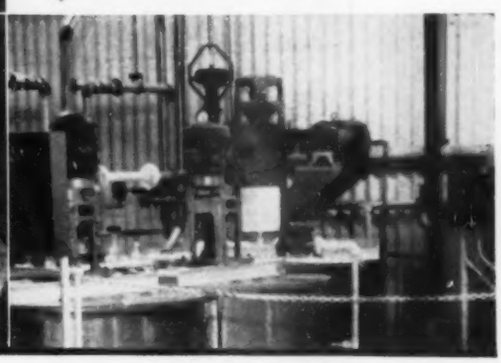
**MAKEDOWN** One 75-hp LIGHTNIN Mixer slurries 50 tons of dry clay—a hopper-car load—as it feeds into dispersion tank at 12.5 tons per hour.

**CLAY SLURRY** at 71% solids waits in five 120-ton storage tanks, held in uniform suspension by 10-hp LIGHTNIN Mixers.

**STARCH MEETS WATER** in 1,000-gallon tanks. Then clay slurry is charged, reducing solids to 52-58%. A 3-hp propeller-type LIGHTNIN Mixer in each tank assures consistent density of feed to continuous cooker.

**HIGHLY THIXOTROPIC** clay-starch slurry from cooker turns over in two tanks equipped with 10-hp LIGHTNIN Mixers. Then it moves to 1,000-gallon storage tanks where 5-hp LIGHTNIN Mixers keep it thoroughly blended to prevent crusting before use.





# One man, 20 mixers clobber cost of coatings

Designed to handle clay in bulk as a slurry, this new mixing system at Blandin Paper Company, Grand Rapids, Minn., helps in four ways to prepare coatings at record low cost.

1. The system itself cost much less to build than comparable coating facilities.

2. It permits the purchase of lower-cost bulk clay.

3. Ended are the problems of space-wasting dry storage, handling of bags, and dust. Clay is always ready for immediate use.

4. One man per shift handles all operations—with the help of 20 LIGHTNIN Mixers ranging in size from 3 to 75 hp.

**What mill management says**

"We knew that mixing was going to be a vital part of our new process," says Harold F. Zigmund, Blandin's vice-president in charge of manufacturing. "We required equipment that was sound and could give us the process result we were looking for.

"LIGHTNIN Mixers have enabled us to accomplish both of our goals. The cooperation and service we have obtained from the MIXCO field representative have been most helpful to us."

Since completing the new coatings plant, Blandin has decided to use LIGHTNIN Paper Stock Agitators on the mill's three brown-stock chests, a neutralization chest, and a broke chest.

Guaranteed mixing performance can mean savings for you, just as it does for Blandin. And it's easy to get. At a call from you, an experienced LIGHTNIN Mixer representative can size up your needs and help you select precisely the right mixing system to deliver the results you want.

He draws upon the experience of thousands of test runs, and successful installations in several hundred mills. He offers you widest possible choice of *standard* power-speed combinations and mixer designs. Call him in now (he's listed in Paper & Pulp Mill Catalog). Or write us direct.

**Lightnin® Mixers**

**MIXCO fluid mixing specialists**

**MIXING EQUIPMENT Co., Inc.,** 141-c Mt. Read Blvd., Rochester 3, N.Y.

*In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.*

## NEW LITERATURE

### A-C Catalog Guide

Quick facts on Allis-Chalmers products for the pulp and paper industry are given in publication 25C6724L. Equipment covered includes pumps; liquid heating systems; water conditioning units; motors; controls; bark, chip and pulp screens; kilns; kiln chain; slakers; car shakers; switchgear; transformers; substations, and material handling machinery. Copies are available on request from Allis-Chalmers Mfg. Co., Industries Group, Milwaukee 1, Wis., U.S.A.

### Safety Starters

Six safety features of the new Westinghouse Type L combination safety starters are discussed in, "Industry's Safest Line of Combination Starters." For a copy of Booklet B-7322 write to Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, U.S.A., or Westinghouse Electric International Co., 40 Wall St., New York, N.Y., U.S.A.

### Mechanical Conveyor Screens

Screens designed for the scalping and coarse and medium sizing of a wide range of bulk materials are described in a catalog issued by Syntron Co. They are also adaptable to some dewatering and wet screening applications or, by inserting steel plates, can be used as picking tables. Contact Syntron at 1378 Lexington Ave., Homer City, Pa.

### Storage Tanks

Chemstor Glasteel tanks (glass inside, steel outside), designed for storing corrosive or sticky products or those that cannot tolerate contamination, are described in a new Pfaudler bulletin. Tanks are available in a wide range of capacities in either horizontal or vertical design. Copies of Bulletin No. 975 may be obtained from the advertising dept., Pfaudler Co., a div. of Pfaudler Permutit Inc., 1097 West Ave., Rochester, N.Y., U.S.A.

### Helical Gear Speed Reducers

The complete line of In-Line reducers is described in 20-page Book 2751. Selection data are provided for 20 reducer sizes in double, triple and quadruple reductions. Load classes and service factors are given, as are horsepower and torque ratings, dimensions, overhung load for high- and low-speed shafts, mounting arrangements and a resume of construction features. Write Link-Belt Co., Dept. PR, Prudential Plaza, Chicago 1, Ill., U.S.A.

### Roll-Handling Attachments

Various types of roll-handling attachments for Elwell-Parker fork trucks are described in a new 4-page publication. Description includes clamp, rotating unit, controls, roll paper apron, Bartel grab and core ram. Write Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio.

### Laboratory Refiner

Bulletin 17-B describes the applications, construction and operation of a single-disc swinghead pulp refiner. Copies are available on request from Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa., U.S.A.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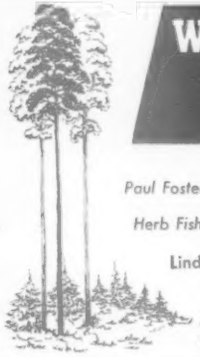

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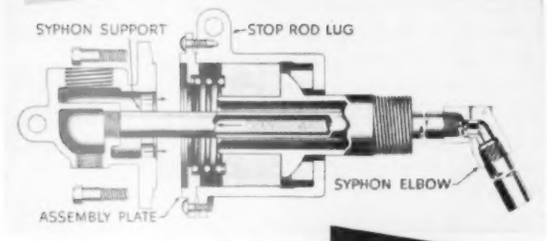


Type "SBP" shown is completely self-supporting. Like all Johnson Joints it has no packing, needs no lubrication or adjustment. The syphon elbow replaces unwieldy curved condensate drainage pipes with two straight pipes, hinges to pass right through the joint. Write for Bulletin S-3002. Johnson Rotary Pressure Joints are available for all operating speeds, pressures, mountings.

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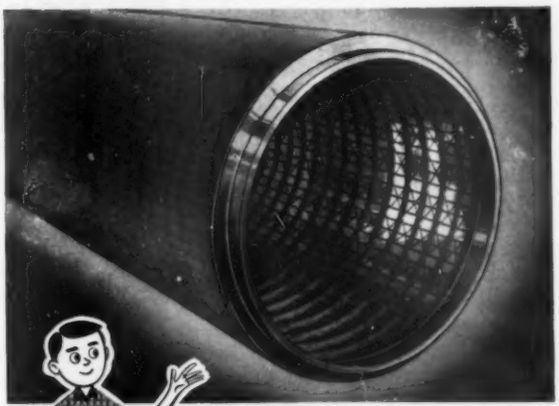

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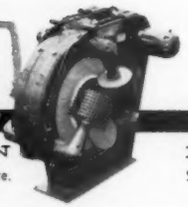

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# The Last Word — PULP & PAPER — Editors' Page

## Dr. Louis E. Wise, Poet

Elsewhere in this issue, we have underscored the pulp and paper industry's heartfelt thanks for the lifetime of work that Dr. Louis E. Wise, 1960 TAPPI Gold Medalist, has devoted to its problems and progress.

Here, we honor him as a poet (pen name: Sapiens), for which he is best known only to close friends and associates. In past years, PULP & PAPER has published several poems by him, of which this is a fine example:

**DR. LOUIS E. WISE of the Institute of Paper Chemistry is the recipient of the 1960 TAPPI Gold Medal.**

### Within a Seed*

Within a seed no greater than my nail
Repose vast possibilites for growth,
Stretching beyond the new synthetic marvels wrought by man.

This seed may bring into light
A noble trunk which men will
Awkwardly, and midst the strife
Of other men, transform into the printed page.

It may produce a massive stem
That, ponderously, man will fashion
(Aided by slash of saw and hiss of steam
And midst a nauseating stench,
Mindful of charnel house or alchemistic den)
Into an iridescent rayon cloth
In which the modern maid
Will clothe her slender body.

Again—'tmay give a tree
The bark of which can yield medicaments,
Potent as those that raised proud Cinchon's wife
From her Peruvian couch.

Or from it may be born
A billet of great size
Which, rasped and sawn,
Will generate strange dyes:—
The velvet black of Stygian night
Or golden tints,
Or fiery reds, that marked the woods of vast Brazil.

*(Footnote for Dr. Isenberg)

To criticize this theme is no need
I know they couldn't all come from ONE seed.

Sapiens.

## A Nostalgic Evening in Michigan

Probably nowhere in the country do paper people become more nostalgic at a meeting than at the annual midwinter joint TAPPI-PIMA (they still call PIMA "the Superintendents") dinner event in Kalamazoo. A crowd of 500 flowed over into extra rooms of the Harris for the feast.

It was an even more sentimental occasion this year because it was the 25th or silver anniversary night.

Ronald Gordon Macdonald, now assistant to the president of TAPPI, wouldn't miss it even though he had been in a hospital a month or so before. Incidentally, he said he has joined Nicotine Anonymous, but Scotch isn't ruled out. Harry Weston also was on hand.

"Mac" recalled that Ralph Hayward of KVP and Mike Redmond of Kalamazoo Paper Co. were the men who started the two organizations that now hold several events together each year, besides carrying on their own programs. It was Harry Weston who revealed that the very first division of the Superintendents Assn., now PIMA, was started in Kalamazoo on July 10, 1919.

Bill Hathaway and Merle Wilkins, both present at this year's event, traded some nostalgic notes on those days, as they were first secretary and treasurer of the TAPPI group.

It was snowy and cold outside but warm as toast inside, as many in the group reminisced over experiences 20 or 25 years ago. The writer of these comments wasn't there 25 years ago but has been to many of the dinners in the past 20 years. There were lots of old friends present who go back that long, or longer. Bert Cooper, Walter Wolfe, Allan Milham, Ray Barton, Doc Southon, Glen Sutton, Arnold Weller, Heine Niendorf, Butsy Astell, Don Ruinveld, Les La Liberte, Frank Libby, Al Mausoff, Chub White, Hugo Hotz—and more. This certainly doesn't pretend to be a complete list. For these and many others, including the editor, it was a night to remember in Kalamazoo.

## College Graduates' Salaries

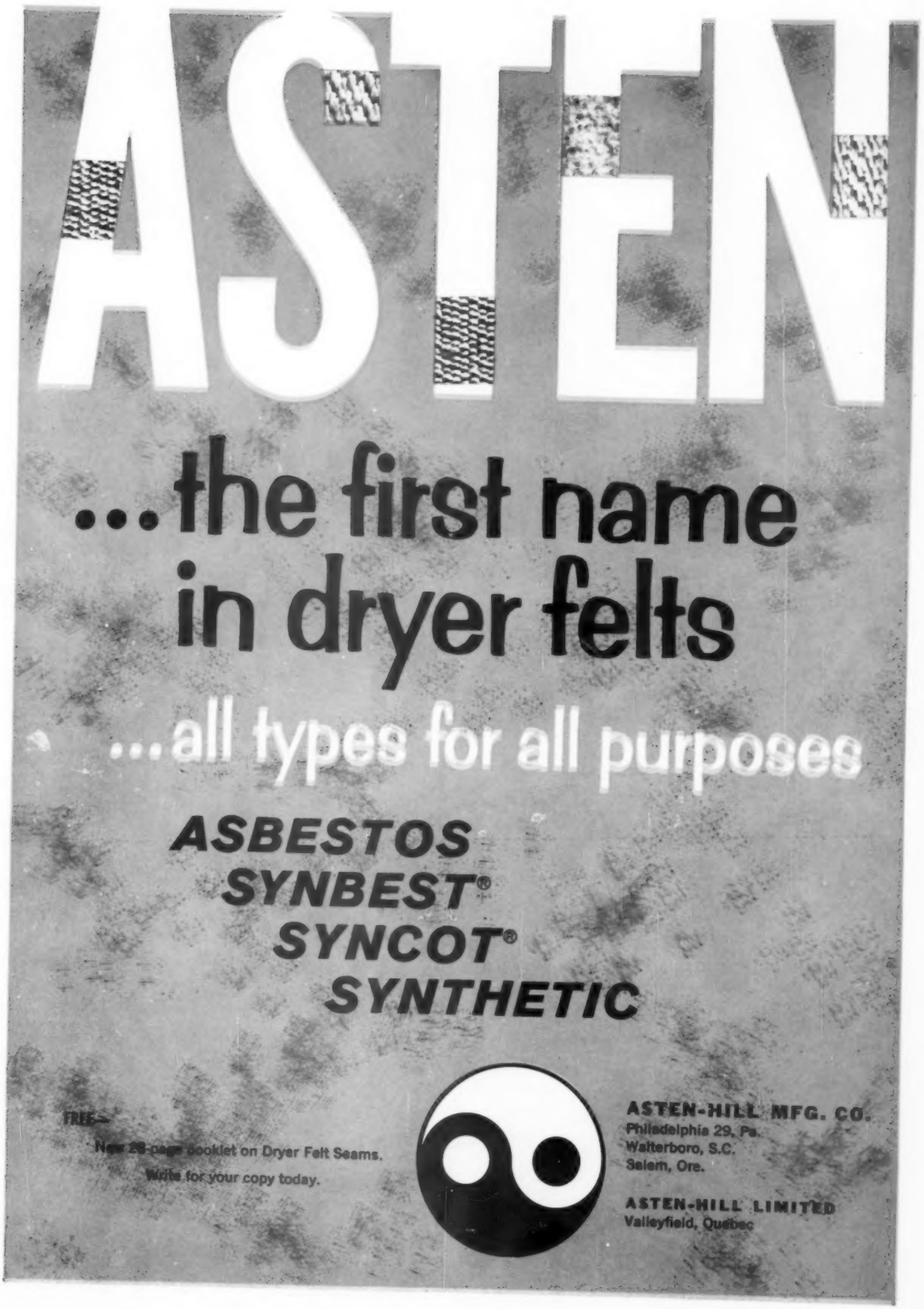
Industry and business will hire 19% of college graduates and then pay them 4% more in starting salaries in 1960 than in 1959.

This is forecast by Dr. Frank S. Endicott, Northwestern University's placement director. He estimates average starting monthly salaries for engineers in 1960 at $515, for salesmen, $434 and for general business trainees, $424.

He comes to these conclusions as the result of a survey of over 200 companies which annually canvass colleges for recruits.

General trends in business and industry being what they are, this forecast is not surprising. Much still can be done in the colleges to teach more about the world of industry and business. Professors should equip themselves to give the new graduate a more realistic concept of this world, so that he doesn't expect too much too soon.

Another worthwhile goal for colleges would be to train graduates going into industry, especially, to write more clearly and express themselves verbally more clearly. These are essential talents today in industry and will help the young graduates to advance into responsible positions.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